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THE INFLUENCE OF DISTRIBUTION COSTS AND DIRECT INVESTMENTS ON BRITISH EXPORTS TO CANADA[1]

By T. E. PENNIE

1. Introduction

This paper is concerned with some of the problems that British manufacturers have to face in the Canadian market. It will be suggested that the methods and costs of distributing British goods in Canada have been an important feature of the failure of British exports to regain their pre-war relative share of the Canadian market.

The differences between the prices at which British products are sold in the U.K. and in Canada are often much greater than the disparity warranted by duty and costs of transport. In his speech at the 1954 annual general meeting the President of the Royal Bank of Canada drew attention to the high Canadian prices of British imports. He gave as examples a book that retailed in the U.K. for 28*s*., or $3.92 at the rate of exchange, which costs $7.50 in Toronto, and a piece of manufactured equipment which cost the equivalent of $112 in the U.K. but $275 in Montreal.

Starting from simple observation of price differences, such as these, an attempt was made to find out how the final prices of imports from Britain were determined. This led to a consideration of the various methods, and institutions, by which products were imported and distributed. Some of the institutions were Canadian subsidiaries of British companies, so the connexion between direct investment and commodity trade had to be investigated.

Published material on the structure of Anglo-Canadian trade is scarce, so visits were made and letters sent to people who worked in the field of British export trade and investment. Import merchants, agents, and distributors working in Montreal on behalf of British firms were visited. Officers of the U.K. Trade Commissioner Service helped. The duties of these officials include reporting on the prospects of projected export ventures and finding agents in Canada willing to undertake the marketing of products deemed to have a chance of success. Officials of Canadian banks and government departments made material available. Finally, questionnaires were sent to 260 firms believed to be Canadian subsidiaries or branches of British companies; replies were received from 80 firms.

[1] The paper was read at the Nuffield College Economics Seminar in April 1955. It is based on a thesis 'The Canadian market for British exports and investments in the post-war years, 1945–1953' submitted to McGill University in May 1954.

If one visits a Canadian official and asks him for his explanation of the British failure to increase exports to Canada the following views are likely to be given:

The first concerns the quality of British products, particularly consumers' goods. As highly manufactured commodities have no clear price which may be said to be too high relative to North American substitutes quality differences are invariably stressed. British goods, it seems, are not of the right size, colour, finish, &c. Their styling is poor and unimaginative. They are not in keeping with the pattern of tastes as set by the U.S. and accepted in Canada.

British goods are believed to suffer from qualitative handicaps because:

(*a*) Manufacturers are accustomed to sellers' market conditions in the protected U.K. and sterling area markets, and so have little incentive to modify their products.
(*b*) Taxation levels encourage indifference in British businessmen.
(*c*) British income levels and purchase taxes have led to the development of commodities of a standard below the minimum acceptable in Canada. No Canadian housewife would, for example, want a small refrigerator or a hand-operated washing machine—and most people prefer large cars.

If it is suggested that criticism of the nature of British goods implies that they are in fact too dear, the following points will be made:

(*a*) If products are too far removed, qualitatively, from available substitutes it is not realistic to talk in terms of price.
(*b*) By the time a commodity has borne transportation and other distribution costs in Canada its relatively low initial cost will be buried, i.e. final price differences cannot fully offset quality differences because a high proportion of price does not depend on quality.

The second view concerns capital goods. Whereas taste differences are stressed for consumers' goods, service differences are stressed for capital equipment. British manufacturers cannot make spare parts and technicians available within a few hours as can North American competitors—not only spare parts for the machinery supplied by the manufacturer himself but spares for components. Whether it be spares or new equipment, three or four weeks are needed to obtain them from Britain, whereas the North American competitor has a factory or warehouse around the corner. Even when British manufacturers hold stocks in Canada they do so only in the major centres, perhaps in one city to serve the whole country. In other words, service facilities, when they exist, tend to be spread rather thinly.

The third point made is that it is difficult to find agents in Canada to take on British goods. The best representative organizations were absorbed by Canadian and American suppliers during and immediately after the war—leaving overseas suppliers to the new and second-rate agents with poor trade connexions and little capital.

Finally it is suggested that British manufacturers will not take risks and lack sales-promoting ability. Unlike the U.K. and Australia, Canada is regarded as a difficult and awkward market. Even if an agent can be found he will expect 10 to 15 per cent. commission instead of the usual 2½ per cent. Modifications of the product will be suggested, advertising and sales-promotion expenses will be incurred, and the market will not be profitable for some years.

The comments of a British official would, with due allowance for patriotism, be similar to these views attributed to a Canadian source. So far as the difficulties of fitting British products into the pattern of North American tastes and technology are concerned, there seems to be little disagreement. The British do, however, lay more stress on the expense and risk involved in trying to establish a substantial market in Canada.

2. The significance of Anglo-Canadian trade

Between the wars Canada obtained about 64 per cent. of her imports from the U.S. and 17·5 per cent. from Britain.[1] From 1920 to 1938 the shares did not move far from these figures. Countries other than the U.S. and U.K. have, individually, always had very small shares. Only Venezuela, which exports oil to Canada, has more than 1 per cent. of Canadian import trade. Since 1946 British exports have failed to approach their pre-war average share. There has been no trend towards re-establishment of the position. For the period 1946–52 as a whole the U.K. accounted for less than 10 per cent. of Canadian imports. The U.S. has, of course, expanded her share. In 1953 she held 73·5 per cent. to the British 10·3 per cent.

As an export market of Canada the U.K. is of far less importance than before 1939. Between the wars the U.S. and U.K. were markets of comparable size, each taking between 36 per cent. and 38 per cent. of Canadian exports. In the last few years the shares have been around 55 and 17 per cent. British dollar earnings by exports to Canada are only slightly less than by exports to the U.S. Between 1949 and 1954 Canada imported about 47 per cent. of total British exports to North

[1] Statistical material for this section was obtained from the following publications of the Dominion Bureau of Statistics, Ottawa: *The Canadian Balance of International Payments in the Post-War Years, 1946–52*; *Review of Foreign Trade* (Annual); *Trade of Canada* (Annual).

America which, on a *per capita* basis, meant that Canadians purchased ten times more British products than did Americans.

British exports to Canada are highly manufactured goods. Apart from small quantities of raw wool, anthracite, and crude textiles they are heterogeneous—and so offer plenty of scope for 'real or fancied' preferences. Chinaware and woollen and worsted piece goods are the most well entrenched. Local production of chinaware is very small. Despite the strong position of British woollen cloth, it has not been possible to channel this preference into a demand for finished clothing. There are important taste differences, and British manufacturers do not seem to adjust their products satisfactorily to North American styles. The market for automobiles has declined steadily since the peak year of 1950, but it looks as if a small permanent place has been established for the British car.

Machinery and electrical apparatus have made notable gains since the early post-war years, as one would expect in view of the unprecedented expansion of Canadian capital investment. The British contribution is, however, modest compared with that of the U.S. In 1952 non-farm machinery valued at $314 million was imported from the U.S. and $32 million from the U.K. Electrical apparatus from the U.S. at $119 million compared with $18 million from the U.K.

3. Distribution costs

The cost of distributing goods in North America is high. It has been estimated that of the final prices paid for consumers' goods in the United States 60 per cent. represents distribution costs and only 40 per cent. the costs of physical production.[1] The situation in Canada is similar; distribution costs may be rather higher than in the U.S. because of the greater distances and the more scattered nature of the Canadian market. These conditions also tend to foster monopoly elements. The costs incurred in selling capital goods are, of course, less than for consumers' goods, but they still account for about 35 per cent. of final price.

These sweeping averages are only useful to indicate the general atmosphere of the Canadian market. Distribution costs vary widely according to the individual product and circumstances.[2] These costs are taken to cover transportation, the holding of inventories or spare parts, extension of credit facilities, advertising and other sales-promoting activities,

[1] P. W. Stewart and J. F. Dewhurst, *Does Distribution Cost Too Much?* (New York: The Twentieth Century Fund, 1939). A series of case studies of particular commodities exported to the U.S. was conducted by the British Export Trade Research Organization. The studies were published by the Dollar Exports Council, under the title *Distributing Goods in U.S.A.* (London, 1952). See also Dollar Exports Board, *Dollar Sales, Consumers' Goods* (London, 1950).

[2] The 'Market Digests' issued by the Export Services Branch of the Board of Trade give typical mark-ups for a wide variety of products exported to North America.

packaging, the provision of service organizations for mechanical products, and retail margins on consumers' goods. All profits made by firms other than the producers are included. There is, in fact, no institutional division among the costs of producers, middlemen, and retailers. Packaging and advertising, for example, may be done at any level of the distributive process, and manufacturers are to an increasing extent marketing their own products. For these reasons it is difficult to derive distribution costs from national income and employment statistics.

For purposes of analysis the final price paid for any commodity may be thought of as made up of two distinct parts—the costs of physical production, and the rest—which may be termed distribution costs. If the commodity is an export from the U.K. to Canada the first cost corresponds to the sterling content of final price and the second to the dollar content, plus customs duties if applicable. If the sterling costs of physical production and transportation to Canada are less than the cost, in terms of dollars at the prevailing rate of exchange, of producing a similar commodity in Canada (or of importing it from the U.S.), there is a prima facie case of comparative cost advantage in favour of the British manufacturer. Whether this advantage will be made good, in terms of demand, will in part depend on the effects of the costs of selling in Canada.

The reasons for distribution costs being relatively large in high-income countries like Canada and the United States are related to differences in the rates of productivity increases between the manufacturing and service sectors of the economy. International comparisons of real national incomes (such as the Gilbert and Kravis work for O.E.E.C.) show that the internal purchasing-power values of currencies are underestimated by the conversion of national incomes into dollars at the rate of exchange—and that the degree of underestimation seems to increase as the level of income falls. Wages tend to equality in different branches of the economy, and as industrial productivity increases the prices of manufactured goods fall relatively to services. Consequently countries at different stages of development show divergencies between the prices of commodities and services.

This argument does not imply that productivity increases have not been an important feature of North American distribution. However, because of its dispersed nature and inevitably high service content, distribution does not offer scope for productivity increases comparable with that of the manufacturing sector. Moreover, increased distribution costs have been closely associated in North America with reducing the costs of physical production. Incurring selling expenses has been a means of enlarging the market and of gaining economies in production. So long as total costs fall so will final prices. Advanced expanding economies tend, therefore, to

shift cost towards distribution. This is not only because of productivity differences, but because the standard—or 'quantity'—of service rises under competitive pressure.

In relating the foregoing argument to international trade, raw materials and simple undifferentiated commodities must be excluded. The prices of staples tend towards a world level, subject to initial transportation costs. The role of price competition is clear. Units of a commodity which are dearer than perfect substitutes fail to enter the distributive process. Major capital goods are also excluded. Hydro-electric equipment and, for example, the British-made rolling-stock for the new Toronto underground railway, is imported on a contract basis. Capital equipment of this nature is not 'marketed'.

For most British exports and potential exports marketing has to be considered. The effects of marketing costs on relative prices may be compared with that of car assembly in an overseas market. If the British had been assembling cars in Canada in 1949 the 22 per cent. devaluation of sterling would have meant only a 10 per cent. or 12 per cent. drop in the Canadian ex-works price of British cars. In a similar way, unless distribution costs fall as the c.i.f. prices of imports fall, the effects of a devaluation on final prices will be reduced. If the British can land a commodity at 90 cents and the ex-works cost of a close North American substitute is $1, and both commodities bear equal distribution costs of $1, the relative price difference at the retail level will be only half that at the production level. Elasticities may appear to be low because the market in which substitution takes place reduces the magnitude of initial price differences.

Whether, in fact, distribution costs will be an increasing or decreasing proportion of final price as initial price falls depends on the profit maximizing behaviour of the firms involved in the distributive process. In the next section of the paper the various types of firms will be examined. However, it is clear that distribution costs have a neutral effect on the elasticities of demand in final markets only if they form a constant proportion of price as price changes.

This appears to be the usual, implicit, assumption in international trade theory—but there is no *a priori* reason why it should be true. Although distribution costs are usually expressed as percentages of prices, and so appear to vary proportionately to price, they are based ultimately on the costs and profits of firms in the distributive chain.

Professor Meade, in Volume I of the *Theory of International Economic Policy* touches on the question of distribution costs. He writes (p. 77):

> . . . even in the absence of trade barriers, the elasticities of demand in international trade will often be less than the elasticities of demand in domestic trade. Products

of B which are imported into A may need to be serviced by merchants or distributors in A before they are sold to final purchasers in A.

After giving an arithmetical example, he continues:

> Thus the more important are the services which must be provided in the importing country to make imported products ready for the final purchaser in that country, the less is the demand for imports likely to respond to a reduction in price charged by the foreign supplier. This argument should not be exaggerated. It is of importance only in those cases where distributing or similar charges are an important element in price and only to the extent that these distributing or similar services cannot themselves be provided by residents of the exporting country. In the absence of rigid trade barriers and allowing time for adjustments, we can assume that normally the elasticities of demand in foreign trade are reasonably high.

Professor Meade's optimism seems to rest on the assumptions that:

(*a*) Distributing charges are a small proportion of price. This is not true of most British exports to Canada. (Meade used wheat as the commodity in his arithmetical example.)

(*b*) That it is possible for the exporting country to absorb much of the servicing expenses. Efforts were made by British manufacturers to do this, but packaging and the preparation of advertising copy in the U.K. were discouraged when it became clear that British technique in these fields was inadequate for the Canadian market. The tendency of more recent years has been to increase the extent of Canadian servicing to ensure closer conformity with Canadian style and practice.

(*c*) That distribution costs are fixed in absolute amount, i.e. distributors will not take advantage of a lower landed price to increase their share of final price. This is in some ways a pessimistic assumption, for distributors might be encouraged by lower prices to 'push' imported goods. That is, to accept lower per unit profits by maintaining percentage mark-ups—or even lowering them—in expectation of a greater total profit from a larger sales volume.

Two aspects of high distributing costs have to be distinguished. First, where costs borne by both imported and local products are similar in absolute amount they tend to reduce relative price differences which exist at the production level. Second, any difference which exists between the marketing expenses of domestic and foreign suppliers is likely to be large in absolute terms, and so will make the final price of the imported commodity relatively high.

There are some fairly obvious reasons why imported commodities should bear higher distribution costs than domestic substitutes. A local manufacturer can deal directly with his customers, his factory is his base of operations where stocks can be held. The overseas manufacturer sells in Canada by some form of representation and has to set up an additional

link in the distributive process. Moreover, a manufacturer generally sells much more of his total production in the domestic than in a foreign market so has greater access to economies in marketing.

A well-integrated marketing structure can give distributing cost advantages which overwhelm any cost of production differences between domestic and foreign suppliers. Faced by a highly differentiated market the British manufacturer can either try to advertise his way into it—or passively allow his products to be sold, in small quantities as 'specialties', that is pseudo-luxury goods. Specialties are essentially non-advertised consumers' goods which move slowly through the distributive process bearing high mark-ups, particularly at the retail level where they pay what is called 'shelf-rent'. They are often sold in special stores which cater to expensive tastes, and retail at prices far above their landed costs. A slow rate of turnover, together with the risk inherent in handling unknown products, makes large margins necessary.

Selling expenses which the British manufacturer must himself meet are a form of cost of entry. Although costs of entry may be necessary to build up a market for a differentiated product, their payment can be avoided if an overseas market is relatively unimportant to the firm. In domestic trade it is essential to build up a market of interested dealers and purchasers by investing in the market, and perhaps by bearing losses in the short run. However, it is usually possible to sell small quantities of a commodity abroad by merely making it available for export. The most passive approach is to ask the Trade Commissioners, or a bank, to find a commission agent, let him have a catalogue and a price list, and then forget about Canada until an order comes in.

The decision of a manufacturer to incur costs will depend on the supply available for Canada and his ability to invest in the market. If he decides to adopt Canadian marketing techniques he must allocate to overhead expenses a higher proportion of anticipated revenue than he would require for sales in the U.K. or sterling area markets. In consequence the risk of loss is correspondingly greater if sales are less than was anticipated.

In competition with U.S. suppliers the British have tremendous disadvantages. American manufacturers have an access to the Canadian mind that British manufacturers could never hope to match. In 1950, a typical year, 97·5 per cent. of total Canadian imports of newspapers and magazines came from the U.S. It is, of course, easy to explain American dominance of Canadian import trade in terms of contiguity, but against the obvious advantages that this affords must be set the fact that Imperial Preference gives Britain tariff advantage and that transportation by sea is relatively cheap. It is possible for ships to sail into the heart of two of the three major Canadian population centres—Montreal and Vancouver.

There is little room for doubt that an important factor in the concentration of Canadian imports on the U.S. has been U.S. direct investment. However, before considering investment and the institutions it has created, the various channels through which commodities flow from Britain to Canada will be described.

4. The export–import channels

Each type of institution is considered according to its function as viewed by the manufacturer in the U.K. In the nineteenth and early twentieth centuries this approach would not have been so appropriate, for the typical small manufacturer took little direct interest in overseas markets. He was a producer, not a merchant. Trade was, and to some extent still is, in the hands of the great merchant houses. However, the growing complexity of internationally traded commodities and the changing characteristics of overseas markets, particularly those of North America, have forced manufacturers to play an active part in the promotion of trade.

A manufacturer who hopes to establish a substantial Canadian market must retain marketing responsibility as far as possible to ensure that the price build-up, through intermediary levels, is not excessive. It is important, therefore, to establish the stage in the exporting process at which control by the manufacturer ceases; also with whom the initiative to export to Canada lies, and who incurs the costs of exporting and selling the product. If a manufacturer bears all necessary costs himself up to the point of ultimate sale he also bears risk. Risk and participation in marketing are directly related; the institutions to be examined are taken in order of increasing responsibility of the manufacturer.

(*a*) *The merchant exporter.* The merchant is an international wholesaler who specializes in the export of a group of allied commodities to various markets around the world in which he has established trading connexions. He provides producers with an outlet for their products which is, in every respect, the same as selling to a domestic wholesaler. The manufacturer does not have to consider the risks and problems of international trade, for his product is purchased outright in the U.K. His responsibility for marketing it, and his interest in it, cease there.

Merchant exporters offer an opportunity to small firms to participate in export trade by purchasing small quantities from them for collection and dispatch overseas in bulk. By paying cash and extending credit abroad the merchants help to finance trade.

In the Canadian market the disadvantages of trade by means of merchants have outweighed the advantages. Today, the traditional type of merchant who sells to a Canadian import house is of negligible importance. Exporting in volume to Canada depends upon sales promotion and

the provision of services comparable with those offered by domestic and U.S. manufacturers.

(*b*) *The U.K. buying office of a Canadian firm.* The large department stores have their own organizations in Britain and the smaller stores are grouped together in combined buying offices. These offices offer British manufacturers an easy, risk-free outlet for their products similar to that afforded by the merchant exporter. Unfortunately, the disadvantages that arise from surrendering control over marketing the product in Canada are also similar. If the product is not susceptible to differentiation, or if it is being sold through other, additional, channels, loss of control is not important. However, department stores purchase a wide variety of consumers' goods in Britain and whenever possible obtain exclusive rights in the Canadian market. Obviously, if the manufacturer has a large supply available an exclusive arrangement would be restrictive. The alternative is to appoint an agent, or establish a Canadian sales office, so that sales can be made to department stores and other outlets.

(*c*) *The agency.* The agency method of exporting is the most usual form. It is found for all types of commodities and for all scales of operation. It is a direct method of exporting, as distinguished from indirect exporting by means of merchants and buying offices which are actually in the U.K. Through his agent the manufacturer is concerned with the Canadian market and can influence the sale of his products.

Two types of agency may be discerned. The first is the commission agent, as such. In numbers he dominates all other forms of representation. The typical agent specializes in a small group of related products—such as woollen piece goods. He usually represents many manufacturers, the number depending on the type of product and the volume of business, but the agencies are not, according to the ethics of the trade, competitive.

A commission agent is primarily a salesman frequently operating, with very little capital, from his own home or rented office. He carries no stock and does not make purchases or sales on his own account. His principals equip him with samples, catalogues, and descriptive literature. Orders are secured and forwarded to the principals in the U.K. who ship the goods direct to the Canadian customers. The agent receives an agreed rate of commission on the invoice value of the goods. Commission rates are based on the relationship of the agent's expenses to the volume of sales. Rates are as low as 3½ per cent. when the number of customers to be approached is small—as with bulk chemicals, and are about 15 per cent. on consumers' goods, the market for which is scattered. Commission rates are lower on commodities which are advertised by the manufacturers.

The second type of agency is the distributive agency. The distributor is distinguished from the commission agent by the kind of service he

affords. He operates on a larger scale, takes physical possession of imported commodities, and is fully responsible for sale and delivery. He stocks complete products, and spare parts where necessary. He carries out the servicing of mechanical consumers' goods and of capital equipment.

Financial arrangements vary; the distributor may operate on a commission basis but more generally he purchases for sale on his own account. The distributor is in many respects a wholesaler. In domestic trade there has been a strong tendency for independent wholesalers to be replaced by manufacturers' marketing organizations. The wholesale function of holding inventories and serving numerous outlets remains, of course, but manufacturers prefer to exercise it themselves. In international trade the wholesaler has retained much of his status, for the overseas manufacturer cannot take over his function unless he invests in a subsidiary or branch. The development of integrated marketing by domestic and American companies in Canada has enabled them to control and keep down the distribution costs that their products must bear.

According to individual circumstances an agency can be a successful method of exporting, but it has been quite inadequate as a means of expanding exports to Canada on the scale that the British government has desired since 1945.

The most fundamental aspect of the agency question arises from the fact that an agent is an entrepreneur whose primary concern is with the profits of his own firm. If he represents a number of manufacturers he will promote the sale of those products which appear to be most profitable in relation to the outlay he has to make. Unlike a manufacturer, an agent has alternative supplies of products, so his interest in achieving a large volume of sales, over time, of any one product is not comparable with that of the manufacturer.

The basic difference, here, between domestic and international trade is that a manufacturer is usually his own distributive agent in his own country. The Canadian firm—and the American due to proximity to the Canadian market, or by means of a subsidiary company—is able to direct sales from its own establishment. The British manufacturer who appoints an agent actually brings in another firm to perform this function.

The most likely obstacle to a coincidence of interests of the two firms is risk, and the need for capital outlays. Manufacturers who establish their own comprehensive selling organizations to replace distributive agents and expand the volume of sales, expect to incur losses for the first three or four years of operations. They are prepared to do this to achieve long-run benefits, but clearly a distributor, even if he has access to the necessary capital, would be interested in a much shorter run and has to set prices which keep his business currently profitable.

(*d*) *The subsidiary marketing company and branch sales office.* Investment in a subsidiary gives a manufacturer control over the marketing of his product in Canada. He is no longer passively making his goods available for export—he is actively committed. There were 127 non-manufacturing selling organizations operating in Canada in 1946, by 1952 there were 259. Twenty-five of these post-war establishments completed questionnaires. All the replies indicated that the firms had been set up to displace unsatisfactory agency arrangements. The firms were reluctant to give profit figures but it was clear that as a group they had not yet been very profitable. None had remitted profits to the parent company.

The establishment of a subsidiary organization is essential for the successful marketing of most capital goods. Simple products can be sold by means of a rudimentary form of representation, but purchasers of complex machinery have to be assured of technical service. It is necessary, therefore, that the establishment of a service organization precede efforts to export to Canada. This may not appear to be economically sound until a market has been gained, yet it is only by these means that a market can be established.

Commissions were set up by the Board of Trade to report on the problems of exporting engineering products and agricultural machinery to Canada.[1] The engineering mission reported that the most effective form of representation was a fully equipped subsidiary company, but that where the prospects for an individual firm did not warrant such an organization one should be set up in collaboration with other U.K. manufacturers. There is an emphasis throughout the report on the advantages of combined marketing activities. The agricultural machinery mission took the idea of collaboration a stage farther and recommended the formation of a 'British Spare Parts Organization' available to the whole industry and related industries.

There is no evidence that attempts to form the organizations were, in fact, made. A similar type of recommendation was put forward by a clothing mission.[2] They suggested that a 'central marketing organization' be set up to promote the sale of British clothing and that extensive group representation should be considered. Nothing further has been heard of the recommendations.

British policy in the post-war years has been conceived in terms of palliatives rather than cures. There is a tendency to assume that adequate individual representation is beyond the capital resources of many firms—or that the Canadian market for British products will not support the minimum scale establishments necessary. The setting up of a wholly

[1] *Report of the United Kingdom Engineering Mission, 1948* and *Report of the Agricultural Machinery Mission to Canada, 1949* (H.M.S.O., London, 1949).

[2] *Report of the United Kingdom Clothing Mission, 1949* (H.M.S.O., London, 1949).

owned subsidiary by a group of manufacturers appears to have many advantages; overhead expenses can be spread, a more extensive range of products can be offered, and multiplication of costly services can be avoided. Despite these advantages only three joint subsidiaries have been established since 1945.

Group marketing retains one of the principal disadvantages of the agency method of exporting—a dissimilarity of interests among the parties concerned. The possibilities of friction among members of the group and the difficulties of creating a satisfactory financial structure for the company, have proved to be more important than economies of scale.

5. Direct investment

It has been suggested that direct investment in Canadian subsidiaries and branches can help export trade in that it affords the imported products distributive facilities similar to those of local competitive products. However, the relationship between direct investment and imports is of wider significance than this.

It is interesting to compare the British and American positions in Canada.[1] In 1946 U.K. direct investments were valued at $335 million, by 1952 $542 million. (The net increase in total British investment, allowing for a reduction in portfolio holdings and the inclusion of Newfoundland in Canadian statistics, was only $170 million in the 7-year period.) In 1946 U.S. direct investments were valued at $2,428 million, by 1952 $4,504 million. When account is taken of control through minority interests, this investment gives American companies control over 35 per cent. of the total investment in Canadian manufacturing industry and 10 per cent. of the purely merchandizing institutions.

Looking, first, at U.S.-controlled Canadian industries as potential customers of British manufacturers it is obvious that they form a large section of the apparent market for capital goods. Subsidiary companies tend to install the same type of equipment as their parent companies—not only because of familiarity with such equipment, but because they obtain the benefit of contract agreements made with suppliers by the parent companies. It is not surprising, therefore, that the best customers of British manufacturers of capital goods are purely Canadian organizations —particularly government enterprises and public utilities.

U.S. subsidiary companies must be regarded as competitors rather than customers. Since 1950 U.S. direct investment has been dominated by the exploitation of natural resources, particularly petroleum and iron ore, but earlier the investment was largely in organizations to supply the Canadian market.

[1] Dominion Bureau of Statistics, op. cit.

A study of U.S. investment in Canada was made in 1936. The authors wished to determine the motives of American manufacturers who established branch factories in Canada; they made the following observations:

> While there is no way of proving the point, it is probable that the service that a subsidiary in the foreign market is capable of rendering has sent more American companies across the border than any other factor, save tariffs. Better control over the sales force, better adjustments to the market, closer association with the consumer, and quicker delivery of goods are all more surely obtainable through the medium of a local subsidiary. It must be granted, however, that in the absence of tariffs and consumer preferences, a well established sales subsidiary will suffice for those purposes.[1]

If it is true that the factors mentioned were important for American firms, it is obviously much more true for British manufacturers operating from a distance of 3,000 miles. Moreover, the differences between U.S. and Canadian consumer preferences are comparatively slight. Canadian tariffs were the primary stimulus to the American branch plant movement. The authors referred to above suggested that the tariff preference accorded to the U.K. encouraged further American direct investment, and at the same time encouraged British firms to continue trade on an export basis. The higher tariffs on U.S. goods stimulated expansion of branch plants, and helped them to the final domination of many areas of the Canadian market for non-tariff reasons.

Local manufacture is a substitute for export trade; therefore investment and exports should be inversely related. The following suggestions, derived from the questionnaire inquiry, are put forward, why in the long run, trade and investment may be complementary, not competitive.

(*a*) Subsidiaries may manufacture most of the products sold, but the proportion which is imported from the parent company, although small relative to total sales, might be significantly larger than would exist in the absence of a local factory. The large British chocolate manufacturers, for example, produce their staple lines in Canada and import the more specialized products, such as boxes of chocolates, from the parent companies. The bulk lines advertise the imported goods and the local organization provides distributive arrangements for a complete range of products. It is in this way that the high-priced specialty market can be avoided.

There appears to be no tendency for subsidiary companies to achieve complete local manufacture where a range of products is involved. The practice of blending the sale of local products with items from the parent companies, which can only be produced efficiently on a large scale, is a feature common to both the consumers and capital goods sectors.

(*b*) The establishment of a manufacturing plant calls for the initial

[1] H. Marshall, F. A. Southard, and K. W. Taylor, *Canadian-American Industry* (Yale University Press, 1936), p. 209.

export of capital equipment. In the absence of a subsidiary this equipment would not have been exported, and although it does not give rise to dollar receipts directly it becomes part of a dollar investment. A replacement demand will be set up by firms which prosper in the Canadian market.

(*c*) The process of direct investment is cumulative. Once a major industry is established the satellite, or supplying, industries move in. These smaller firms are encouraged to invest in Canadian establishments by the knowledge that there is an assured initial market which can be used as a basis for expansion. A major British automobile company report that it is now possible to buy locally components equal to 5 per cent. of the value of a car. The aircraft industry is similar in this respect.

(*d*) Local manufacture creates confidence in the continuity of supply and the availability of technical service. This is of obvious value in the case of mechanical products. But for all commodities both dealers and purchasers are more likely to build up their businesses on the basis of British goods if supplies are guaranteed.

(*e*) Finally, an evolutionary pattern can be discerned. Agencies tend to be replaced by merchandizing companies, which in turn are replaced by manufacturing establishments, perhaps after a local assembly stage. As it would be irrational to replace exports by locally made substitutes unless the latter was a more profitable method of serving the Canadian market, it is evident that the same factors which lead to the establishment of a Canadian factory will cause a fall in exports, or a failure to expand. In other words, there may be no choice between losing a market to a local or U.S. competitor—for cost or flexibility reasons—and retaining it by establishing a factory. The fact that tariff protection may be obtained once a reasonable domestic market has been won is an added incentive.

It might be suggested that British firms would have invested in sales-promotion activities, and would have been glad to set up subsidiary companies, had it not been for the dollar shortage. If the Treasury had been willing to release dollars on a worthwhile scale all might have been well. This is certainly not true. There is considerable evidence that ever since 1946 dollars have been made available in far greater quantities than legitimate demands for their use.

A British manufacturer who plans to invest in a Canadian enterprise finds that standards and distribution methods are very different from those in other markets; costs of entry are high and competition from Canadian and American manufacturers is intense. Close substitutes exist for most U.K. products in Canada, whereas discrimination against dollar goods by sterling area countries has limited the extent to which alternatives to British goods could be obtained. The availability of substitutes means that the establishment of a market for British products—whether exported

from the U.K. or produced in Canadian subsidiary plants—is a more hazardous venture then elsewhere, and one more likely to succeed only in the long run.

In other words, the attitude of British manufacturers towards the Canadian market has not been such as to lead to closer economic ties between Canada and the U.K. There is, of course, no basis on which it can be said that their fears were not justified. One cannot help but feel, however, that people in this country have consistently underestimated Canada's scope for economic expansion and have been all too ready to write off Canada as hopelessly lost to the Americans.

LIQUIDITY RATIOS AND FUNDING IN MONETARY CONTROL

By A. E. DE JASAY

THE Quantity Theory, and with it the belief that there is, after all, a direct link between the sheer volume of money and the level of prices in terms of money, dies hard; perhaps it deserves to live. In his long-awaited book,[1] Professor Patinkin suggests that unless we confess to suffering under a certain odd and irrational illusion, we all ought to profess that belief. The authorities in charge of monetary control in many countries, and notably in Britain, had already become partial converts to it around 1951. Central banks have accordingly been recalled to active front-line service, and have made their presence in the front line increasingly conspicuous. Rightly or wrongly, they were operating some mechanism of control over (among other things) the quantity of bank deposits with great vigour,—often in recent times, holders of fixed-interest securities and prospective borrowers may have thought, with too great vigour.

In this new climate there developed throughout the spectrum of monetary literature, from the financial journals to learned periodicals, signs of bewilderment about how the control worked, if it worked at all. Metaphors about squeezing and biting, blunting and cutting, scalpels and axes, ear-stroking and stick-wielding multiplied, and it appeared that even if there were full agreement about what a change in the quantity of bank deposits might achieve, no agreement was in sight on how such a change can best—if at all—be brought about. In Britain particularly, the majority, including, it seems, the authorities, rallied around the view that control really operates via the Floating Debt. This thesis came to be ascribed to the Chairman of Lloyds Bank, and is alternately called the 'Franks doctrine' or the 'new orthodoxy'. The minority regard it as a rather shapeless smoke-screen; they remind their opponents that there is such a thing as the cash ratio, *via* which determination of the cash base uniquely fixes the volume of bank deposits. Why, then, the changed emphasis? Why was it necessary to devise a new method of central banking control, more complicated and, judging by the wide *technical* disagreements about it, much less easy to understand than what had gone before?

The present article is inspired by the writer's suspicion that the mechanism currently employed defies easy understanding, not because it differs from orthodoxy in some complex and cunning way—the difference is quite straightforward—but because the old mechanism itself is also widely

[1] *Money, Interest and Prices*, Evanston, Ill. and New York, 1956.

misinterpreted. This suspicion rests on the evidence of great neglect, in much of the literature on monetary control, of the aims and plans of those who are supposed to be controlled; for banks, like other firms in a market economy, are free agents within a framework of rules. The nature of the measures needed to make them depart from their chosen equilibrium position cannot be readily understood in isolation from the nature of that equilibrium.

The essence of the misunderstanding is well illustrated by two statements in the opening article of a recent full-dress debate on these matters. A contrast is drawn between operating on the *cash ratio* and on the *liquidity ratio* in this manner: '. . . If cash is reduced by £10 millions, the banks must reduce their deposits by £125 millions'; while, if control is exercised through the liquidity ratio *instead* of the cash ratio, 'for a given desired reduction in advances and investments, the government must therefore fund short-term Treasury bills in the ratio 30:70'. From this it is deduced that '. . . the suggested way of managing the banking system, by operating upon total liquid assets, will be far *more onerous* to the Treasury than by operating on the much *smaller* cash reserve. The above example shows that it would decrease the efficiency of control by 75 per cent.'[1]

This, of course, is a *non sequitur*. The fact that the cash ratio is $1:12\frac{1}{2}$ does indeed tell us that *if* the cash base is reduced by x, bank deposits must simultaneously fall by $12\frac{1}{2}x$; but it does *not* tell us what must be done in order that the cash base should be reduced by x. Reduction of the cash base is not a *method* of managing the banking system, but its stipulated *result*. It is the target of actions taken in conformity with some method of management; with a fixed cash ratio, achievement of the target of course *implies* a reduction in bank deposits and in at least some matching bank assets. It is meaningless to compare this result with one of the possible methods by which it could be achieved; we must, in formulating a judgement, compare like with like, e.g. two methods of control, according to whether they do or do not rely on more than one mandatory banking ratio.

Only a failure to grasp the basis of the single-ratio control mechanism explains this confusion: for it should be obvious that *changing the cash base requires funding under either method* of control (even if 'funding' is occasionally called 'making Bank Rate effective'), and the difference between the old, single-ratio orthodoxy and the new, double-ratio one is simply that *at any given height of Bank Rate*, the latter renders the *necessary amount of funding smaller* than it would otherwise have to be. This is neither a merit nor a demerit in any *a priori* sense, for we cannot say whether the

[1] T. Balogh, 'Dangers of the New Orthodoxy', *The Banker*, June 1956, pp. 352–3: italics not in original.

freedom of the Treasury not to fund is more precious than the freedom of the banks to choose liquidity ratios; but it is a clear difference in the technical sense—a matter of fact and not of judgement.

As is generally known, the control mechanism devised by the 'new orthodoxy' hinges on a gentlemen's agreement, backed, probably unnecessarily, by the oft-quoted and never-invoked paragraph 4 (3) of the Bank of England Act 1946. By means which are not pertinent to our purpose, the authorities secured an informal undertaking from the clearing banks to the effect that no individual bank will let its total 'liquid' assets (cash, call money, and bills), fall below 30 per cent. of its total assets on the average of four weeks in any month (except fractionally, temporarily, and with good reason). Presumably, this undertaking was sought because the authorities were slightly apprehensive that lower ratios may be chosen in its absence. For obvious reasons, only minima and no maxima were at this stage imposed. Much has been made at various junctures of the current monetary controversy of the fact that, at least since the 1930's, the major London clearing banks were carrying something either side of one-third of their assets in 'liquid' form, supposedly as a means of cushioning their cash reserves from seasonal and other shocks, so that the new orthodoxy merely transformed an established practice into an officially sanctioned rule. Clearly, if the authorities had simply persuaded the banks to do what they would have done anyway, there was little point in the persuasion.

It appears, however, that since the official request to regard 30 per cent. as the 'floor', the banks have been content with actual liquidity ratios of only a few per cent. above the floor, and at times not above it at all. Bankers are reputed strongly to dislike proximity to floors; they are said to have kept a big, fat cushion of liquid assets for that reason. Since the official hand raised the liquidity floor, they make do with a very much thinner cushion and often sit on the floor itself. This might raise the question whether the former role of the liquidity ratio was in fact wholly or even largely that of cushioning the cash reserve, and not that of restricting 'output' and keeping yields on the main assets, investments and advances, above what they would have been had the banks utilized their full 'credit potential' in the face of a somewhat stagnant demand. Economics is not quite at a loss for theories on the behaviour of a small group of interdependent sellers sharing a market characterized by a rather inelastic demand function; yet it is content to analyse banking in terms of habitual ratios and safety margins.

Be that as it may, it is certainly not proven that the imposition of liquidity minima was but a redundant gesture, which made no difference to the actual ratios the banks would have chosen in a period when the

demand for credit was not stagnant, but booming. If this was nevertheless the case, nothing further need be said: there is no new factor in the situation, the new and the old orthodoxy are identical. But if the new orthodoxy does have the effect of obliging the banks to work to a higher liquidity ratio than they otherwise would, a comparison of the two orthodoxies becomes a revealing exercise.

If the banks are at liberty to run down their liquidity ratios when it seems worth their while to do so, an open-market sale (aimed, *via* the cash ratio, to reduce bank deposits below what the banks, in the light of existing and expected interest rates, regarded and have chosen as optimal) must *ex hypothesi* induce them to use the means at their disposal for preserving their—presumably preferred—position. They must send the discount market into the Bank so as to get the cash needed for maintaining their balance-sheet total. The net effect of the open-market sale in the book-keeping sense is that the banks directly or indirectly take up the securities the Bank has sold, their call loans to the discount market decrease by the same amount, and the item 'Government Securities' in the Bank Return decreases as the item 'Discounts and Advances' increases. There is no change in the cash base and in bank deposits. When the Treasury bills transferred from the market to the Bank mature, they can be paid off either from the proceeds of a new issue of bills to cover all maturities including those in the hands of the Bank under Discounts and Advances, or by the sale of other securities, i.e. by funding.

If the first course is taken, the former situation repeats itself: we are, with Mr. Manning Dacey, 'once again just going round in circles'.[1] If it was not profitable for the banking system to change its deposits in the face of the existing pattern of Bank Rate and gilt-edged yields last week, it will not be profitable to do so this week or the next. So long as the Bank keeps its front door open to all comers, and the threshold—Bank Rate—at a given height, the door will be used unless the incentive to do so changes. There is, of course, no reason why the banks should themselves have to cross that threshold, and be continuously indebted to the central bank as their sisters in, for instance, Germany and France are. It is possible to compound the entrance fee for a great many occasions; in other words, the banks can make arrangements for the discount syndicate to step in and perform certain work whenever the banks are reluctant to reduce their deposits to the level thought desirable by the authorities. Rather than borrowing from the Bank at a penalty rate, they can lend to the discount market at a concessional rate. The compensatory character of this concession need not, of course, be overtly formulated; indeed, it can simply be expressed in the vague phrase that 'when money is tight, we must stick together'.

[1] 'The Floating Debt Problem', *Lloyds Bank Review*, April 1956, p. 29.

The City, where gentlemanly ways of doing business must become second nature to those who hope to succeed there, is well suited for such informal arrangements. The clearing banks keep the charge on 'regular' money to the discount market 1¾ per cent. below Bank Rate year in and year out. 'Regular' money is about two-thirds of total call money lent by the clearing banks. It is never called in practice, so that it does not represent any extra 'liquidity' over and above that attaching to Treasury bills. The margin between the regular money rate and the bill rate—at the time of writing, about 1¼ per cent. on about £285 millions of regular money, corresponding to an annual rate of roughly £3·5 millions,—can thus best be understood as a subsidy paid by the clearing banks to the discount market, in return for which the latter broadly adjusts its policy of tendering for Treasury bills to the needs of the banks, and shoulders the burden of borrowing from the Bank. In the limit, the burden it will be prepared to shoulder, and its willingness, as a residual tenderer, to bid for bills at less than Bank Rate in a period when it is in the Bank practically all of the time, in fine, its readiness to maintain its 'output of credit' above the level which would allow it to equate marginal revenue with marginal cost, will be exactly balanced against the value it places on its informal coalition with the clearing banks in this truly Neumannian 'general game'. Until that limit is passed—and current experience in the 'credit squeeze', with the market's indebtedness to the central bank usually averaging less than one-tenth of the volume of call money it receives from the clearing banks, gives no grounds for believing that it can easily be passed—the preferred balance-sheet totals of the clearing banks will not be affected by the fact that cash is bought from the Bank not directly, but through an adequately remunerated intermediary.[1]

To effect a change, the second alternative course must be taken. The funding operation must continue, with the government broker peddling out stock at a price he can get, the banks taking it up and in exchange returning bills to the Bank at the price set by the latter, until the pattern of rates changes sufficiently to induce the banks to retain their remaining money market assets, allow their cash to fall, and correspondingly to reduce their other assets; or, in the logically extreme limiting case, until they have no more money-market assets left. Under the new orthodoxy, with

[1] It is perhaps significant that comments on monetary control by those close to the market—*The Economist*, *The Banker*, and the interesting editorial article in *Lloyds Bank Review* quoted above, spring to mind—tend rather lightly to dismiss the familiar argument that because the discount market 'loses' by being in the Bank, it will not do so continuously. In his letter in *The Economist* of 2 June 1956, Mr. Newlyn takes the Editor to task for tacitly assuming that the market will keep on hiring cash from the Bank although the bill rate is below Bank Rate. But since those most familiar with the City know best that the market's very existence depends on its usefulness to the banks, this assumption is perhaps natural.

a mandatory minimum-liquidity ratio, the limiting case is modified to read: 'until their liquidity ratios fall to the mandatory minimum.' Thus it is clear that the setting of (high) *minimum* liquidity ratios is technically a *perfect substitute for funding* when the authorities wish to contract the volume of money. Similarly, when they wish to expand it, the setting of (low) *maximum* liquidity ratios is a *perfect substitute for unfunding*, i.e. for open-market purchases of securities and a matching increase in the outstanding Floating Debt. In a cheap-money drive, unless maximum ratios are imposed, the banks may respond to an increase in the cash base simply by pushing short rates down, so that the slope of the yield curve is made steeper, instead of medium and long rates falling significantly.

The burden the Treasury must assume as the price of a given reduction in bank deposits can best be defined as the total of two sums, one always positive, the other of uncertain sign. The positive burden is the interest charge on securities of a value equal to the eventual fall in the case base (i.e. to the net change in the assets of the Bank in both the Banking and the Issue Departments). Bankers' Deposits and the Note Issue cannot fall without someone being paid to carry the securities the Bank refuses to carry. The second component of the burden is the (positive or negative) difference between the interest charge on the total outstanding National Debt before, and the interest charge after, its composition was changed by the funding required to bring about the desired reduction in the cash base. Whether or not this is a positive burden depends, on the one hand, on the Treasury bill rate and the effective redemption yield of the stock by which the bills are replaced in the course of the funding; and, on the other hand, on the pattern of these rates at all dates in the future during which, instead of now, the funding might have been carried out. The latter, of course, can at best be forecast in the light of the government's longer-range policy about interest rates, if indeed such a policy is formulated. But it seems safe to say that generally, whenever the bill rate is higher than longer rates (so that funding appears to promise a saving in the short run), longer rates are thought likely to fall (so that funding now rather than in the future may be assumed to involve an extra burden and to offset the short-run saving), and conversely if the bill rate is below longer rates.

If, on balance, funding is not regarded as a net extra burden, there is no reason for anxiety about the cost of monetary control on account of the funding the authorities *have to* do; while if it is so regarded, the less funding is needed to bring about a given fall in the cash base the better—at any rate for the Exchequer. The new orthodoxy, with its mandatory second ratio, sets two easily calculable limits within which the necessary amount of funding must lie. The lower limit is equal to the desired reduction in the cash base itself. This is also the lower limit under the old orthodoxy. The

upper limit is the sum total of (*a*) the 'cushion' or 'excess liquidity' in the banking system (the volume of liquid assets carried by it over and above that needed to establish the minimum liquidity ratio), and of (*b*) the desired reduction in aggregate deposits multiplied by the mandatory minimum ratio. To illustrate with a numerical example, if total clearing bank deposits are 1,000, the minimum ratio 30, and the actual ratio 33 per cent., and the target is to reduce deposits to 900, the maximum amount the authorities could possibly find themselves obliged to fund would be 60, made up of 30 to absorb excess and 22 to absorb mandatory liquid assets, and 8 to absorb cash. Without a mandatory ratio it would be conceivable, though of course highly improbable, that the composition of the National Debt would have to be altered to an extent sufficient to mop up not only 'excess' liquidity, but all of the banks' money-market assets before the authorities could get at the margin of their cash reserves and hence at bank deposits.

In the circumstances when the setting of minimum liquidity ratios makes any difference at all, it is clearly to reduce the required amount of funding, so that if and when funding is a burden, it reduces that burden. Those who argue to the contrary, and who believe that the need for a reduction in short-term borrowing by the government has only arisen since, and because of, the new-fangled stress on the second ratio, rest their case on a mistaken view of the technique of monetary control as it would operate in the absence of such a ratio.

One reminder about the nature of funding may not be out of place here. The Floating Debt may be funded either by new issues, or by departmental sales, of gilt-edged. The Departments sell old stock, carrying perhaps a low coupon rate, while a new issue would have to carry a rather high coupon rate in order to be taken up; and therefore it is sometimes said or thought that if one can avoid issuing new stock, one should do so. However, open-market sales by the Departments can only be made at prices which give the same effective redemption yield as would a new issue of the same maturity, and thus, apart from considerations of indivisibility in new issuing, the argument in favour of funding by open-market sales really rests on the view that the floating of a new stock with a very high coupon rate damages the credit of the government, and is a step towards the Balkanization of its finances, while open-market selling below par is not. This is a perfectly respectable view, but it is as well to realize that it is not based on any direct comparison of the costs of the two ways of funding.

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ANALYSIS OF THE GENERATION OF PRICE INFLATION

A STUDY OF COST AND PRICE CHANGES IN THE UNITED KINGDOM, 1946–54[1]

By J. C. R. DOW

INTRODUCTION AND SUMMARY

(1) This paper is a statistical analysis of cost and price changes since the war, and tries to explain why prices rose.

(2) Part I presents estimates of the price (average value) of total final outlay, which are derived (see Table I) with minor adjustment from the official estimates of national income and expenditure. Separate estimates are given of the price of business output gross of imported material content but net of indirect taxes. Final prices are estimated to have risen 48 per cent. between 1946 and 1954. Of this the import-cost component accounts for almost one-quarter, labour costs for almost one-half, and unit gross profit margins for about one-fifth (see Table V). Similar analysis is made of the rise in the price and costs of 'business output'. There is reason to believe, however, that these cost components were themselves inter-related, i.e. wages (and hence labour costs) rose when prices rose; and absolute profit increases were associated with rising costs.

(3) Part II attempts to carry the analysis farther by exploring these inter-relationships. A hypothesis is first proposed, cast for convenience in the form of an algebraic model, consisting basically of two assumptions concerning the behaviour of labour costs and profits respectively: namely, that previous prices are a main influence on money wages and salaries, and that prices are mainly determined by previous (labour *plus* import) costs. If such a system inherits a rising price trend, or has injected into it a rise in import costs, it will tend to generate a sequence of rising prices in subsequent periods. Unless all costs increase in proportion, the sequence will be damped. It is shown that a rising trend of productivity can act as a powerful damping factor, but only if real wages and salaries (or, more strictly, the excess of increases in money incomes over lagged price changes) increase less rapidly than productivity.

(4) Room is left in the formulation of the model for the possible influence, both upon labour costs and profits, of changes in the pressure of demand. Examination of the actual behaviour of labour costs and of profits suggests that demand is capable of modifying the responses of the system at each stage; but it seems unlikely that such modifications would completely offset strong cost impulses. If this is correct, the model can still be used as a tool of analysis.

(5) An attempt is then made to see how far the historical development can be explained in these terms. It is difficult to know how much labour costs would have

[1] This study was made possible by the award to the author over the past two years of a Leverhulme Research Fellowship, and is part of a more general inquiry by the National Institute of Economic and Social Research into the behaviour of the British economy and the effect of economical and financial policy in the post-war period. Mrs. Moira Salter acted as research assistant during the first year, and was responsible in particular for the classification of imports. Mr. L. A. Dicks-Mireaux assisted as a research officer in the later stages of the work, and to him is due the Mathematical Appendix. Acknowledgement must be made of assistance by many statisticians in government departments. Much is due to Mr. W. A. B. Hopkin and others who criticized drafts.

risen if prices had been stable, for prices were never stable long enough to provide evidence. Apart from this important qualification, general reasoning suggests that if import costs had not risen, the system might have been fairly stable, and that the price rise inherited from the war might have been fairly quickly damped out. The rise in import costs, however, even if it had taken place smoothly and under the most favourable internal conditions, was at the limit of what the system could tolerate without generating a cost-price spiral. Taken in conjunction with the inherited price rise, the rise in import costs explains most of the price rise which occurred. These deductions are in general confirmed by a year-by-year analysis of the generation of price increases (see particularly Table XIV). Import costs did not in fact rise smoothly: the sudden rise in 1950–1 lifted United Kingdom costs and prices to a new high level; the subsequent fall in import costs helped to 'kill' the repercussions which the first rise would otherwise have generated. This phase was therefore over by 1953. It is suggested that 1954 saw the beginning of a development hardly met with earlier in the post-war period: price inflation generated by purely internal forces.

(6) Part III attempts to bring together some of the implications for policy. The analysis suggests that measures to affect demand are only one of the kinds of action that can be taken.

I. Aggregate Estimates of Costs and Prices

(i) Problems of Estimation

1. The aggregate indices of costs and prices used here are derived from the official estimates of the volume and value of national output. All references are to the 1955 *Blue Book*.

2. The object of the study is to examine changes in the price of output and their relation to cost changes. It seems best in this context to include only output which is actually sold on the market and hence to exclude government output. Any price attributed to the latter must be notional; and, unlike other kinds of output, no profits are earned in producing it. The official estimates have therefore been adjusted to exclude the incomes of, and output attributed to, government employees engaged in public administration and defence and in the public health and educational services.[1]

3. Total final sales, adjusted to exclude government output, but including sales to stock, will be called here *final outlay*. This may be considered to consist of either *total* imports, and business (i.e. non-government) output *net* of import content; or, alternatively, *final* imports and business output *gross* of import content. The term *business output* is here used to mean output gross of import content, and gross also of depreciation. Business output, excluding output put into stock, will be called *business sales*. In some parts of the analysis profits will be treated (as usual in national income analysis) as a factor cost; at other times

[1] The Statistical Appendix, in which the methods used to make this adjustment are described, has had to be held over for publication in the next issue of this journal.

profits will be treated as a residual or margin between price and (import *plus* labour) costs. Where the usage is not clear from the context the terms *factor cost* and *prime cost* will be used.

4. The *Blue Book* gives estimates for years 1946–54 of the current value of imports of goods and services, of labour and other incomes, and of net indirect taxes. These are shown in Table I, items 1–5. Their total is the

TABLE I

The Price of Final Outlay and Factor Cost Components of Final Prices, 1946–54

	1946	*1948*	*1954*
Current Value Series (£ million)			
1. Imports of goods and services	1,668	2,197	3,602
2. Labour incomes	4,457	5,756	8,730
3. Trading profits and other incomes	3,177	3,799	5,389
4. *less* stock appreciation	−125	−325	−75
5. Net indirect taxes	1,164	1,449	2,050
6. Total final outlay at market prices	10,341	12,876	19,696
Volume Series (£ million, 1948 prices)			
7. Total final outlay	11,985	12,876	15,446
Average Value Series (1948 = 100)			
Contribution of:			
8. Unit import costs	13·9	17·1	23·3
9. Unit labour costs	37·2	44·7	56·5
10. Unit trading profits and other incomes	26·5	29·5	34·9
11. *less* stock appreciation	−1·0	−2·5	−0·5
12. Unit indirect taxes (net)	9·7	11·2	13·3
13. Price of final outlay	86·3	100·0	127·5

Source: *Blue Book*, tables 1, 7, and 12, except that items 2, 6, 7, and 9 exclude government output. For latter see Statistical Appendix (to be published later).

value of final outlay. An estimate can also be derived from the *Blue Book* of the volume of final outlay. Estimates of costs and prices can thence be derived. Thus, division of the current value total (item 6) by the volume total (item 7) gives an index of the price (average value) of final outlay (item 13). Similarly, division of each of the input components (items 1–5) by the same volume total (item 7) gives the contributions (items 8–12) of each type of factor cost to the price index.

5. The volume series is derived from the official estimates of national

expenditure at constant prices.[1] Data permitting, these are obtained by revaluing separately at the appropriate 1948 prices each homogeneous group of goods and services. The price estimates obtained by dividing current expenditure on all items by the corresponding total at 1948 prices are therefore current-weighted arithmetic averages.

6. There are two main advantages in cost and price estimates derived by this method. First, it ensures that the indices of costs are fully consistent with the price index. Other indices exist more or less appropriate for measuring some but not all of the main cost components. If these were used there would still be an unexplained residual; hence there would be no indication of the size of errors due to discrepancies in weighting and coverage. On the method used in Table I, however, we know that the current value of the input items (1–5) adds up to the value of final outlay. The estimates of costs (8–12) must therefore be consistent with that of prices.

7. Second, price estimates so obtained gain by incorporating not only the available information about prices but information also about incomes and output. In national income estimation the estimate of income can be checked against that of expenditure at current prices. With the *Blue Book* (table 1) estimates, the two totals agree closely each year. Estimates of the volume of output can similarly be checked against estimates of expenditure at constant prices. As estimated in the *Blue Book* (tables 12 and 13) these two totals agree fairly closely over the period 1946–54, though not in each separate year. These comparisons support belief in the substantial accuracy of the estimates of the current value and the volume of final outlay, upon which the present price estimates depend.

8. The categories of income and expenditure used in national income work have been chosen for their economic significance and therefore provide a good conceptual basis for cost and price analysis. Aggregative treatment can admittedly give only a summary picture of cost and price changes. In many ways it would be desirable to divide the economy into five or six industrial sectors, and study price formation in each, and the transmission of costs between them. Though the *Blue Book* (table 16) contains separate production accounts for some industrial groups in terms of constant prices, sufficient information is not at present available to construct separate 'cost and price accounts' for the main industrial groups.

9. A more refined aggregative treatment is attempted in Table II, which gives estimates of the costs and prices of business output as here

[1] The volume series (item 7 of Table I) is obtained from the revalued expenditure total (*Blue Book*, table 12) not the alternative indices of national product (*Blue Book*, table 13). The two diverge most seriously in 1950. The possible error in the price series will be noted later (para. 13).

defined (i.e. inclusive of the cost of imported materials, but not of final imports). Indirect taxes are excluded and treated as taxes on expenditure, not input.[1] The estimates of business output already used, valued at current and 1948 prices (items 2–4 and 7) are combined with estimates of the cost of imported materials (items 1 and 6).

TABLE II

The Price and Factor Costs of Business Output

	1946	*1948*	*1954*
Current Value Series (£ million)			
1. Imports of materials roughly adjusted for changes in stocks	880	1,372	2,112
2. Labour incomes	4,457	5,756	8,730
3. Trading profits and other incomes	3,177	3,799	5,389
4. *less* stock appreciation	−125	−325	−75
5. Value of business output	8,389	10,602	16,156
Volume Series (£ million, 1948 prices)			
6. Imports of materials roughly adjusted for stock changes	1,249	1,372	1,655
7. Value added by British business	8,402	9,230	11,135
8. Volume of business output	9,651	10,602	12,790
Average Value Series (1948 = 100)			
Contribution of:			
9. Unit cost of imported materials	9·1	12·9	16·5
10. Unit labour costs	46·2	54·3	68·3
11. Unit trading profits and other incomes	32·9	35·8	42·1
12. *less* stock appreciation	−1·3	−3·0	−0·6
13. Price of business output	86·9	100·0	126·3

Source: Items 1 and 6 from *Trade Accounts* as explained in text; items 2, 3, 4, and 7 as for Table I.

10. The estimates for imported materials exclude final imports (as well as all invisible imports) and are based on detailed examination of the *Trade Accounts*.[2] An attempt was also made to exclude the effect of

[1] The estimate of real business output thus depends on the official estimate of 'domestic product at factor cost' (*Blue Book*, table 12, second part). J. L. Nicholson ('National Income at Factor Cost or Market Prices', *Economic Journal*, June 1955), may be correct in querying the method used to obtained this, however paradoxical his positive conclusions.

[2] The laborious procedure of segregating items in the *Trade Accounts* which appear to be chiefly finished goods is described in the Statistical Appendix (to be published later). The segregation followed the general lines adopted for the official input-output estimates for 1950 (*Blue Book*, table 17). Highly fabricated metal goods, however, proved difficult to classify. Hence motor-cars were treated as consumer goods; and the rest as investment goods, though in fact many will be components, and hence input.

fluctuations in stocks of imported materials, which would be capable of seriously distorting estimates of both costs and prices when obtained by the methods used here. Available information on stocks of such materials appeared too incomplete for use; and it was therefore simply assumed that the 'volume' import content of business output was constant at its 1948 level. Though rough, the adjustment is simple, and probably better than any alternative available.[1]

11. The resulting estimate of the value of business output is probably

TABLE III

Price of Business Output and of Final Outlay

(1948 = 100)

	1946	*1948*	*1950*	*1952*	*1954*
As contributions to price of final outlay:					
Business output . . .	70·0	82·3	87·0	104·5	104·6
(Final imports and other items)	(6·6)	(6·5)	(8·0)	(8·1)	(9·6)
Net indirect taxes . . .	9·7	11·2	11·6	13·2	13·3
Price of final outlay . .	86·3	100·0	106·6	125·8	127·5
Price of business output . .	86·9	100·0	105·2	126·0	126·3

an approximate indication both of the absolute size and of the annual changes in such output. It is, however, a rough estimate only, since it excludes all invisible expenditure abroad (though much of the latter is in fact business expenditure), and double-counts the British share of the c.i.f. margin on imports.

12. The relation between the present estimate of business output, and the previous estimate of total outlay, is summarized in Table III. Business output, as here defined, accounts for over 80 per cent. of final outlay at market prices, or over 90 per cent. at factor cost. Apart from indirect taxes, the residual (bracketed) is accounted for chiefly by imports of final

[1] Imports of materials have fluctuated considerably from year to year; and comparison with the changes in output suggests that much of the fluctuation was due to changes in stocks. There is considerable information available about the quantity of stocks held by the government and other importing agents, and in some cases by consuming industries. From this, value estimates were made by applying price series derived from the *Trade Accounts*. (It is intended that these estimates will later be published in a National Institute study by Mr. M. FG. Scott on United Kingdom import trends.) Even after correction for these recorded stock changes, the volume of materials imported still showed erratic fluctuation as compared with the volume of output. Inspection of the series suggests that in 1948 consumption of imported materials approximated to actual import, and that in other years consumption varied more closely with output than with import. The aggregate input-output ratio for the economy cannot of course have been perfectly constant. Shifts in the composition of output (as between industries with differing import coefficients) have been significant over the period as a whole, and important also during the recession of 1952.

goods and of services. But it includes also components due to the exclusion from the estimate of business output, but not from that of final outlay, of stocks of imported materials in this country, and of what may loosely be called 'British-owned imports afloat'; and to the double-counting in the former total of the British share of the c.i.f. margin on imports. Little significance attaches therefore to this residual item.[1]

(ii) The Main Price Series

13. Table IV shows price indices for the main categories of final outlay. The index of total final prices (1948 = 100) rose from 86 to 127 (48 per cent.) between 1946 and 1954. One possible cause of inaccuracy has already been pointed out (p. 255, n. 1): namely, that there is a discrepancy between the expenditure and output estimates of the volume of national product. The discrepancy, immaterial over the whole period, in some years is significant. In particular, if the output indicators had been used, the rise in prices between 1949 and 1950 would have been shown as about 2 (instead of about 4) per cent.; while between 1950 and 1951 it would have been shown as about 11 (instead of 9) per cent.

14. It did not prove possible, in calculating the average value of final outlay, to remove changes in stocks of imported materials from the value and volume series. The prices of such materials have, however, fluctuated much more violently than that of final outlay; and it might be suspected

[1] It was originally hoped to present a fully integrated series of estimates of cost and price changes; and it would have been more satisfactory to fit additional detail into the national income framework, rather than to present the estimate of business output as an unrelated total. A good series for business output, gross of import content, requires a detailed classification of imports and detailed price information, both of which can only be got from information given in the *Trade Accounts*. It is difficult to incorporate this into national income estimates, for the 'foreign' items in the latter are on a 'payments' basis. If 'trade' estimates were to be substituted, definitional adjustments to other items in the national accounts would be needed. In particular, if imports are to be measured at the time they arrive in this country rather than at the time they are paid for, and exports correspondingly, the item *investment in stocks* must be defined to exclude what may loosely be called 'British-owned stocks abroad or on the high seas'. (In fact some stocks held in this country are owned by non-residents.) Similarly, if imports are to be measured inclusive of the cost of shipping and insurance, the output of, and incomes earned in, British shipping and insurance must be so defined as to exclude that part of the c.i.f. margin on British imports which accrues to British firms. At present it is not possible to reconcile satisfactorily the trade and payments figures for imports. A comprehensive attempt to incorporate trade rather than payments estimates into the national income accounts was, therefore, though with reluctance, abandoned. This remains an untidy spot in the statistical landscape, worth tidying up for the sake, for example, of knowing more about import-output relations. In spite of the difficulties, the best approach would still seem to incorporate 'trade' estimates of the foreign items in the national income accounts. The alternative would be to find some way of fitting to the 'payments' figures commodity detail and price information derived from the *Trade Accounts*. In the absence of a satisfactory reconciliation between trade and payments figures, it is doubtful whether the latter procedure can be satisfactory—as indeed whether the present official estimate of the 'volume' of payments for imports and exports, on which the first of the present series of estimates depends, is itself very dependable.

that their inclusion would distort the overall index. This, however, appears not to be the case: the last line of the table shows an index of the price of final outlay from which investment in stocks *of all types* is excluded, the movement of which is almost identical with that of the more inclusive index.[1]

15. Table IV shows the divergent movements of the prices of goods and services going to different types of final expenditure. Much of this diver-

TABLE IV

Indices of Market Prices of Final Outlay, 1946–54

(1948 average values = 100)

	1946	*1947*	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*
1. Consumers' purchases	87·0	93·0	100	102·4	105·8	114·5	121·0	123·1	125·2
(*a*) *of which, food*	*86·8*	*93·5*	*100*	*104·5*	*111·6*	*122·1*	*135·6*	*142·5*	*146·9*
2. Government purchases	(82·3)	(96·6)	100	100·7	106·6	118·4	127·2	133·2	133·4
3. Fixed investment of which	87·7	92·2	100	102·6	106·9	119·8	131·9	132·4	134·3
(*b*) *Plant machinery and vehicles*	..	*91·1*	*100*	*103·2*	*108·0*	*120·4*	*135·6*	*136·6*	*138·0*
(*c*) *Building and construction*	..	*93·4*	*100*	*101·8*	*105·7*	*119·1*	*128·3*	*128·5*	*130·8*
4. Exports of goods and services	84·4	92·4	100	103·4	109·6	129·8	137·6	130·4	128·0
(*d*) *Shipments of merchandise exports*	*81·5*	*91·3*	*100*	*103·3*	*108·7*	*127·1*	*134·8*	*130·4*	*127·1*
5. Total final outlay	86·3	93·0	100	102·5	106·6	118·5	125·8	126·4	127·5
(*e*) *Total excluding investment in stocks*	*86·2*	*93·0*	*100*	*102·5*	*106·7*	*118·3*	*125·8*	*126·4*	*127·5*

Source: Items 1, 3, and 4, *Blue Book*, tables 1 and 12; item 2 as in Appendix, part I; item (*a*), *Blue Book*, tables 21 and 22; items (*b*) and (*c*), *Blue Book*, tables 46 and 47; item (*d*) from *Trade Accounts*, &c., and therefore not strictly comparable with 4; items 5 and (*e*) as for Table I above.

gence can probably be explained by the differing industrial derivation of the various types of final expenditure; and a reasonably full account of price changes would require a separate analysis of costs and prices in each of the main industrial groups. Consumers' prices rose somewhat less rapidly than the average over much of the period, despite the relatively large increase in the price of food (item 1). The price of fixed investment rose more than average because of the rise of metal goods prices (item 3). The latter also affected the price of exports (half merchandise exports being metal goods), as did the fall in price of textiles, and some other types of manufactured goods, after 1951. Metal goods became important in government purchases after 1951, which may account for the rise in the price of government purchases in the second part of the period.

16. The average index of final prices, being an average value index, reflects the changing pattern of final sales, as well as changes in the price of different types of output. In the present case, however, the divergences

[1] One reason is that the weight of investment in stocks of imported materials is in any case small. In addition, the average value series implied by the official estimates of investment in stocks (*Blue Book*, tables 1 and 12) appears to make little allowance for fluctuations in the price of primary commodities.

in the price movements are not sufficiently great for the changing pattern of output to make much difference. If, for instance, consumers' purchases, goverment purchases, investment, and exports, are each given a fixed (1948) weight, the combined index in no year diverges more than 0·8 from the current-weighted index; and over the whole period shows an almost identical rise. The choice of another base year for the volume series would have affected the price series to some extent, but would not have affected the degree to which different factor components contributed to price changes.

(iii) The Factor Cost Components of Final Outlay Prices

17. Table V presents a summary picture of the main cost components of final prices (derived as for Table I). In 1948 import costs constituted one-sixth of the cost of final outlay; home factor costs almost three-quarters; and indirect taxes *less* subsidies rather over one-tenth.

TABLE V

Factor Cost Components of Final Outlay, Summary 1946–54

(1948 index of final prices = 100)

Contributions to index of final market prices	*1946*	*1948*	*1950*	*1952*	*1954*	*Points change 1946–54*	(% *change*)
1. Unit import costs . .	13·9	17·1	20·4	25·0	23·3	+9·4	(+*68*%)
2. Unit labour costs . .	37·2	44·7	47·0	54·1	56·5	+19·3	(+*52*%)
3. Unit trading profits and other costs . . .	26·5	29·5	32·3	33·1	34·9	+8·4	(+*32*%)
4. *less* stock appreciation .	−1·0	−2·5	−4·7	+0·4	−0·5	+0·5	..
5. Unit indirect taxes (net) .	9·7	11·2	11·6	13·2	13·3	+3·6	(+*37*%)
Index of final market prices	86·3	100	106·6	125·8	127·5	+41·2	(+*48*%)

Source: As for Table I above.

18. Over the period 1946–54 import costs rose 68 per cent. Labour costs rose 52 per cent.; profit margins and other incomes 32 per cent. Indirect taxes rose less (37 per cent.) than import and home factor costs. Final prices rose on average by 48 per cent.

19. Hence, of the 41 points rise in the index of final prices between 1946 and 1952 (Table V, penultimate column) *one-quarter* can arithmetically be ascribed to the rise in import costs; *one-half* to the rise in labour costs; *one-fifth* to the rise in profits and other incomes; and less than *one-tenth* to indirect taxation. This is a highly summary picture which reveals only half the truth. In particular it does not reveal the interconnexions between the different cost components (dealt with in Part II).

20. 'Trading profits and other costs' (item 3) is a heterogeneous item,

and measures the combined contribution of all property and semi-property incomes to the price of a unit of final output. It covers the gross trading profits of companies, farmers, professional persons, and other sole traders and partners; the gross trading incomes of public companies and other public enterprises; and rent.[1]

21. To make clear the meaning of trading profits and of stock appreciation (item 4) in the table, it is necessary to make an algebraic digression.[2] Trading profits here are profits as measured by normal accounting procedures, under which stocks inherited from a previous accounting period are treated as a notional purchase, and stocks carried over to the next period are treated as a notional sale, i.e.

$$P = S - R + F_s - I_s,$$

where P = trading profits, as conventionally measured,
S = sales,
R = outlay on materials and labour, &c.,
I_s = initial value of stocks,
F_s = final value of stocks.

22. Under certain conditions, trading profits so defined may be regarded as a measure of the margin between sale receipts and the prime costs that were incurred in producing the goods currently being sold (i.e. their historical cost). This may of course differ from the costs currently being incurred to produce similar goods for sale at some future period. The conditions are that stocks are valued on the FIFO principle at 'cost or replacement whichever is lower' (as appears to be usual); and that costs rise or are stable but do not fall (as was true for much but not all of the period under review). The expression $(R - F_s + I_s)$ then measures the current outlay on materials and labour, *less* the cost of materials and labour bought in the period but embodied in goods not yet sold, *plus* the cost of materials and labour embodied in goods sold in the period but bought in a previous period, i.e. the historical cost of the materials and labour embodied in goods sold in the current period. $P = S - (R - F_s + I_s)$ is thus a measure of the margin of sales receipts over the historical prime cost of goods *sold* in the period.[3]

[1] The corresponding items in the *Blue Book* are items 13–18: the residual error (item 19) is also included here. The behaviour of the separate components is described further in section (iv) below.

[2] This follows closely the exposition given by J. R. Parkinson in his article in this journal for June 1955 on 'The Terms of Trade and the National Income 1950–2'. Since the various relationships are often found puzzling, it seemed desirable to set them out briefly again. For a general discussion of these questions reference should also be made to *National Income Statistics: Sources and Methods* (H.M.S.O. 1956), pp. 309–13 and 324–7.

[3] In practice the measure is imperfect, for four main reasons:

(i) Current accounting practices are not uniform as assumed above (see *National Income Statistics: Sources and Methods*, pp. 311–12).

23. Many argue that a more appropriate measure of profits is as a margin above the current or replacement cost of the materials and labour embodied in current sales. If there is no change in the volume of stocks, this is

$$Px = S - R$$
$$= P - (F_s - I_s),$$

where $(F_s - I_s)$ is the increase in the value of stocks, in this case equal to stock appreciation. More generally,

$$Px = S - R + (F'_s - I'_s)$$
$$= P - (F''_s - I''_s),$$

where $(F'_s - I'_s)$ is the increase in the volume of stocks, valued at the average price ruling during the period for the commodities put into stock; and stock appreciation is $(F''_s - I''_s) = (F_s - I_s) - (F'_s - I'_s)$. Thus trading profits *less* stock appreciation roughly measures profits as a margin above the replacement cost of goods *produced* in the period.[1]

24. There are thus two ways of regarding items 3 and 4 in Table V. If we consider that the appropriate measure of profits for national income purposes is profits as a margin above replacement costs,[2] the two items should be amalgamated. The contrary view is, however, possible.

25. The fact that the accounting conventions referred to above are generally employed appears to show that trading profits is the predominant

(ii) Input costs in most industries have at times fallen: trading profits will then be less than the 'historical margin'.

(iii) In valuing work in progress, inadequate account tends to be taken of a firm's own labour costs: hence when the value of work in progress increases trading profits will be less than the 'historical margin'; and vice versa when the value of work in progress falls.

(iv) The cost of materials purchased by individual firms will include an element representing the profits earned by other firms. Hence an aggregate of $(F_s - I_s)$ will itself include a profit element, which will tend to be positive when $(F_s - I_s)$ itself is positive. In aggregating, it is impossible to remove this element to obtain a margin over the historical cost *to the economy* of material and labour input. In this sense, trading profits will tend to be less than the 'historical margin' when the value of stocks is rising; and vice versa when the value of stocks is falling.

[1] Since sales receipts (S) are unknown, Px has to be calculated indirectly by adjustment of P. In practice the independent estimates of changes in the volume of stocks and of stock appreciation, which have to be used in making this adjustment, are not highly reliable (*National Income Statistics: Sources and Methods*, ch. xi, §§ 6–9); and in any case they are unlikely to reflect perfectly the conventions implied in business stock valuations. Some of the reasons (in particular points (iii) and (iv) of n. 3, p. 261, above) which make trading profits less than the 'historical margin', will also make profits excluding stock appreciation less than the 'current margin' when the value of stocks is rising; and vice versa when the value of stocks is falling.

[2] This is of course the orthodox and internationally accepted view among national income statisticians (see for instance *A Standardized System of National Accounts* (Organization for European Economic Co-operation, 1952), p. 52) to which since 1951 the official estimates of the United Kingdom have adhered.

conception in the minds of business men; while analysis of the behaviour of profits (Part II, below) appears to show that prices are fixed with as much regard to historical as to replacement costs. It can therefore be argued, not only that trading profits are relevant to the explanation of cause and effect,[1] but are also the most acceptable concept as a constituent of factor costs. The concept of factor cost appears clear-cut in relation to labour incomes; but it is not so in relation to profits. If trading profits as conventionally defined measure most nearly what the recipients think they are earning, they are perhaps the most acceptable measure of the reward to which entrepreneurs lay claim in rendering their services to the community.[2]

26. On this view one would say, when costs were rising, that output was being sold *below current cost*. The deduction of stock appreciation (Table V) could then be regarded as an adjustment to take account of this lag in passing on costs; and a measure of the difference between the current costs of production, and the prices currently being charged to final purchasers. The item in the table for stock appreciation per unit of output is, however, only an approximate estimate of this difference in costs. For trading profits approximate to the historical margin earned on *actual sales* (para. 22), whereas the calculation in the table is in terms of outlay including sales to stock. In view of the poverty of information on stocks, a better estimate hardly seems worth while.[3]

(iv) The Composition of Business Prices

27. Table VI summarizes the composition of business prices. As explained in connexion with Table II, import costs here include only the cost of imported materials; and such costs are in principle measured at the moment of input, not of import or of payment for imports. Neither final imports, nor indirect taxes are included; labour costs, as before, exclude incomes of government employees.

[1] Cf. *National Income Statistics: Sources and Methods*, p. 17.

[2] To argue in this way is not necessarily to say that profits should always be measured as a margin above historical cost: in some trades this may not be the prevalent concept. In practice, the content of 'trading profits' varies from trade to trade, according to the conventions adopted for stock valuation: the LIFO principle for instance yields something very like replacement-cost profits. Variations in stockstaking conventions might perhaps be taken to reflect variations in the prevalent conception of profits; which in turn might be taken as acceptable for purposes of social valuation.

[3] The error is less than might be supposed. Strictly speaking the current value of changes in the volume of stocks of semi-processed and finished goods should be deducted both from prime costs and the value of output; and the value at 1948 prices of the volume change should be deducted from the volume of total output. This would hardly affect the price series, but would slightly reduce the contribution of prime costs and increase that of profits. Present data hardly permit the segregation of stocks of finished goods and work in progress from stocks of materials in the country and on the high seas.

28. The analysis is repeated graphically on Chart 1. The period may be divided into four phases: two periods when prices rose relatively slowly (1948–50, and 1952–4), each preceded by a period of more rapid price increase (1946–8, and 1950–2). The chart shows also the sum of imported material costs and labour costs, expressed as a contribution to the index of business prices. The full (undotted) line is the current value each year of imported materials consumed and of labour incomes, *divided by* the volume of output valued at 1948 prices. This shows the current cost of producing each year's output: in general this was higher than the historical cost of the output currently being sold, indicated by the dotted line.[1]

TABLE VI

Factor Cost Components of Price of Business Output, Summary 1946–54

(1948 index of business prices = 100)

Contributions to index of business prices	*1946*	*1948*	*1950*	*1952*	*1954*	*Points change 1946 –1954*	(% *change*)
1. Unit cost of imported material	9·1	12·9	15·1	20·3	16·5	+7·4	(+*81*%)
2. Unit labour costs	46·2	54·3	56·8	65·3	68·3	+22·1	(+*48*%)
3. Unit trading profits and and other costs	32·9	35·8	39·0	40·0	42·1	+9·2	(+*28*%)
4. *less* stock appreciation	−1·3	−3·0	−5·7	+0·4	−0·6	+0·7	..
Index of business prices	86·9	100	105·2	126·0	126·3	+39·4	(+*45*%)

Source: As for Table II.

29. The space between current and replacement costs, measured horizontally, indicates the time taken for input (whether of imported materials or of labour) to be processed and distributed to final buyers. The period of throughput differs of course for different types of input. Up to 1952 the effect of rising import costs on the value of stocks was probably more important than rising labour costs. The chart probably therefore chiefly reflects the period of throughput of imported materials. Another estimate, based on a comparison of the value of input, output, and stocks in different industries, suggests that this period varies for different categories of imports from 2 to 14 months with an average of about 8 months.[2]

30. The difference between the current price of business sales and the current level of business costs gives the unit cost of profits and other

[1] As already explained (paras. 21–26), historical costs can be approximately estimated by dividing (for each year) the sum of the current value of imported materials consumed *plus* current labour income *less* stock appreciation, by output at 1948 prices.

[2] See J. R. Parkinson, op. cit., p. 184.

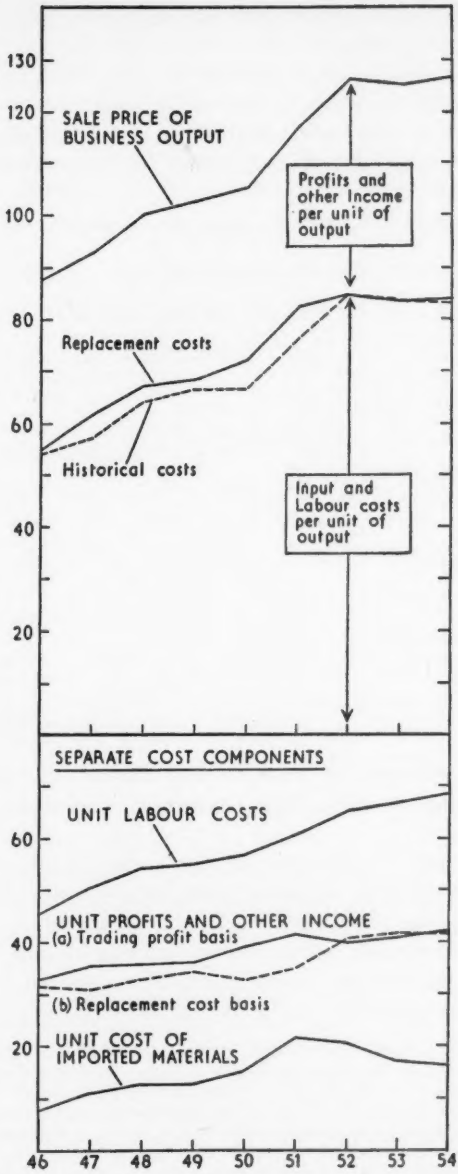


CHART 1. *Cost Components of Business Prices*

(1948 price = 100)

property incomes on a replacement cost basis. Similarly, the difference between the current price of business sales, and the historical cost of the output being currently sold, is the unit cost of profits, &c., on a trading profit basis. If, on the reasoning set out in para. 25 above, one regards trading profits as a factor cost, a distinction has to be drawn between the price of output currently being sold and the cost of output currently being produced.[1]

31. The different cost elements are shown separately at the bottom of

TABLE VII

Analysis of Business Labour Costs, 1948–54

	1948	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*
Business labour bill (£ million)							
Wages	3,949	4,156	4,338	4,813	5,116	5,425	5,849
Salaries	1,557	1,662	1,787	2,018	2,150	2,258	2,431
Employers' insurance contributions	250	300	325	354	390	433	450
Total	5,756	6,118	6,450	7,185	7,656	8,116	8,730
Index (1948 = 100)	100	106·3	112·1	124·8	133·0	141·0	151·7
Indices, 1948 = 100							
Number of business employees	100	101·2	102·4	103·4	103·5	104·2	106·0
Volume of business output	100	104·5	107·1	111·4	110·6	115·0	120·6
Labour cost per head	100	105·0	109·5	120·7	128·5	135·3	143·1
Output per head	100	103·3	104·6	107·7	106·9	110·4	113·8
Labour cost per unit of output	100	101·7	104·7	112·0	120·3	122·6	125·8

the chart. A considerably more detailed analysis of business costs is given for reference in Table VIII. It is convenient to comment now on three points.

32. Trading profits and other incomes, measured per unit of business output, rose considerably less than import costs or labour costs (Table VI). Percentagewise they therefore fell. Whether measured on a trading profit or replacement cost basis, such incomes accounted for a smaller proportion of prices, and represented a lower percentage mark-up, in 1954 than in 1946. (The heterogeneous components of this item are separately shown

[1] Such costs, like all factor costs defined tautologously, cannot be known till the output is sold, i.e. in a period on the average say 8 months later. This could be shown on Chart 1 by shifting the price curve to the left by an amount corresponding to the average period of throughput. Since the latter is not known exactly, the estimate of the cost (so defined) of output being produced in each year would also be inexact. Alternatively, it could be estimated by raising the price curve by an amount corresponding to stock appreciation in each year. This would only be correct if percentage trading profits &c. were perfectly stable. In fact by the time output came to be sold the historical profit margin might turn out to have been different from the historical profit margin being taken on output being currently sold.

in Table VIII). The behaviour of profit incomes is discussed further in Part II.

33. Unit labour costs can be considered as the product of two opposite tendencies: the rise in the average wage or salary, on the one hand, and the rise in output per head, on the other (Table VII). It proved possible to estimate the size of the business labour force only for 1948 and subsequent years.[1] Between 1948 and 1954 the average money income of

TABLE VIII

Factor Cost Components of Business Prices. Full analysis for 1946–54

(1948 index of business prices = 100)

	1946	*1947*	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*
Contribution to index of business prices									
1. Imported material costs	9·1	11·3	12·9	12·9	15·1	21·4	20·3	17·1	16·5
2. Labour costs	46·2	50·3	54·3	55·2	56·8	60·8	65·3	66·6	68·3
(*a*) Wages	31·9	35·0	37·2	37·5	38·2	40·7	43·6	44·5	45·8
(*b*) Salaries	12·9	13·5	14·7	15·0	15·7	17·1	18·4	18·5	19·0
(*c*) Employers' insurance contribution	1·4	1·8	2·4	2·7	2·9	3·0	3·3	3·6	3·5
3. Total current costs	55·3	61·6	67·2	68·1	71·9	82·2	85·6	83·7	84·8
4. *less* stock appreciation	−1·3	−4·5	−3·0	−1·8	−5·7	−6·4	+0·4	+0·6	−0·6
5. Total historical costs	54·0	57·1	64·2	66·3	66·2	75·8	86·0	84·3	84·2
6. Unit profit margins (trading profits and other incomes)	32·9	35·4	35·8	36·0	39·0	41·5	40·0	40·9	42·1
(*a*) Gross trading profits of companies	13·8	15·6	16·3	16·2	18·3	20·9	18·6	19·0	19·8
(*b*) Profits of public corporations and enterprises, &c.	2·6	2·7	2·7	2·9	3·4	3·3	2·7	3·1	3·6
(*c*) Income from self employment	12·0	12·4	12·5	12·6	12·4	12·5	13·1	13·1	12·9
(*d*) Rent	4·5	4·7	4·5	4·5	4·7	4·8	5·3	5·5	5·8
(*e*) Residual error	..	..	−0·2	−0·2	0·2	..	0·3	0·2	..
7. Price of business output	86·9	92·5	100	102·3	105·2	117·3	126·0	125·2	126·3

Item 6*a* excludes, while item 6*b* includes, companies at any time nationalized in period. Item 1 is derived from the average value of imported materials treated as input (estimated as described in the Statistical Appendix to be published later) which moved as follows:

70·5	*87·4*	*100*	*99·7*	*116·8*	*165·2*	*157·2*	*132·2*	*127·5*

business employees is estimated to have risen by 43 per cent., or 7 per cent. a year. Output per head in the business sector is estimated to have risen by about 14 per cent., or about 2¼ per cent. a year. (The dip in 1952 reflects the unwillingness of entrepreneurs to discharge labour in face of the fall in output.) Unit labour costs therefore rose by only 26 per cent., or about 4¼ per cent. per year.

34. Chart 1 shows that the phases of price rise (already commented on) were closely parallelled by the movement of labour costs (consult bottom part of chart). This is not surprising, since labour costs amount to more than half of prices; but it is not the whole story. To some extent wage costs must be considered a dependent, not an independent, variable. The rise in import costs alone was sufficient to cause some rise in the final price level (Table VI). Some of the rise in wage-costs may therefore have been a result of a rise in wages induced by the rise in prices, originally in

[1] See Statistical Appendix (to be published later).

turn due to the rise in import costs. A rise in import costs and in labour costs might furthermore be expected to bring some increase in unit profits. If such relationships exist, it follows that the indirect influence of increases in import costs was greater than the direct effect shown by the previous tables and chart: such relationships will be further discussed in Part II below.

II. Economic Interpretation

35. As already noted an adequate appraisal of cost and price changes must allow for the fact that the various components of prices are in some degree interdependent; and that the process of interaction will take time. Events in one year, or changes in one variable, cannot be understood in isolation from the rest. It has therefore seemed best to proceed by first erecting a formal hypothesis about the interrelationships between the various components of prices, in order to analyse possible types of interaction. The actual behaviour of two of the main components of prices, profits and labour costs, will then be briefly discussed. Having brought the interpretation nearer to earth, it then seems possible to propose certain conclusions about the process of inflation in the post-war period in the United Kingdom.

(i) Hypothesis regarding Cost and Price Relationships

36. The hypothesis to be presented for examination contains two main elements: an assumption regarding the behaviour of profit margins (i.e. the relation between costs and prices); and an assumption regarding the behaviour of wages and salaries, and hence of labour costs.

37. The first assumption is that profits, though not absolutely invariable, do not vary in such a way and by so much as to compensate for changes in costs. Higher costs, then, must result in higher prices. It is also assumed that they result in higher prices only after a certain time lag; in fact this appears to be less than 1 year (para. 29), and for simplicity we will assume the lag to be 6 months. Profits and other property incomes are treated as an aggregate, and changes in such incomes are described in terms of their relation to the sum of the cost of imported materials and of labour.

38. Secondly, it is assumed that full compensation for price increases is something which trade unions aim at and which both sides to wage negotiations accept as a standard of reference; and that variations of wage earnings about this norm can be treated as a variable affected by employers' demand for labour, or the strength or pushfulness of trade unions.[1]

[1] These distinctions correspond to those proposed in the latest *ECE Survey*, where wage increases are classified as 'compensatory', 'demand induced', or 'spontaneous': see *Economic Survey of Europe in 1955* (Economic Commission for Europe, 1956), p. 159.

Price increases will be assumed to affect wages only after some delay, which will be taken as about 6 months.[1] It is furthermore assumed here (though later reconsidered) that increases in salaries are similar to those of wage earnings, and can be explained in the same way.

39. Two further variables will be employed: the change in import costs and the change in output per man. These will be treated as exogenous, i.e. not affected by the change in prices or the level of demand in the United Kingdom. In practice there are other variables, not taken account of here, whose influence can be important. In particular, there may be changes in indirect taxes or subsidies; and, for this or other reasons, the kind of prices relevant to wage or salary negotiations (e.g. the 'cost of living') may change differently from other final prices. These complications will be neglected in the first place, though consideration will later have to be given to them.

40. In giving algebraic formulation to the hypothesis, changes in costs or prices will be expressed as *ratios* between the average level of costs or prices in one period and in the previous period, i.e. an increase of 5 per cent. would be expressed as a ratio of 1·05. In view of the two time lags described above, the length of the 'period' can conveniently be taken to be about 6 months. Different periods are denoted by subscripts. Then where

P = the ratio expressing the change in final prices,
M = the ratio expressing the change in the cost of imported materials,
W = the ratio expressing the change in money wages/salaries per head,
Q = the ratio expressing the change in output per head,
U = the ratio expressing the change in percentage profits and other property incomes, i.e. such incomes expressed as a proportion of the value of output,
a = the weight of labour costs in the total of imported materials *plus* labour costs,
b = the weight of profits and other property incomes in the value of final output,

on the assumptions set out above, price rises can be explained by an equation of the form:

$$P_{t+1} = \left(a\frac{W_t}{Q_t} + [1-a]M_t\right)(1+bU_t-b).$$

41. It is proposed to regard wage and salary increases as made up of

[1] See further, para. 70, below.

two elements: compensation for previous price increases, and the remainder. Thus where

R_t = the ratio expressing the degree to which wage and salary increases under- or over-compensate for previous price increases (or, more loosely, the increase in real wages and salaries),

then $W_t = P_{t-1} R_t$.

The general equation then becomes:

$$P_{t+1} = \left(a\frac{P_{t-1} R_t}{Q_t} + [1-a]M_t\right)(1+bU_t-b).$$

42. The behaviour of the system is sensitive to the ratio R/Q, which may be described as the relation between 'real wage and salary' increases (calculated with lagged prices) and the increase in productivity. This ratio is used here as an expository device to demonstrate the critical values. The two terms to the ratio are more or less independently determined, and there is no reason to suppose that the ratio, though generally close to unity, will display any particular or uniform value.

43. Provided that R, Q and U are fairly close to unity, labour costs are fairly closely linked to previous prices and prices are fairly closely linked to previous costs. An upward disturbance of prices is thus capable of generating a series of price rises in successive periods. Each 'round' of the cost-price sequence can be considered as taking about 1 year, i.e. two 6-month periods as defined above.

44. The equation is presented as a description of the mechanism *only of price increases*, not of price decreases. For it is unrealistic to suppose that trade unions will accept a fall in money wages when prices fall, with the same readiness that they ask for a rise in money wages when prices rise. It is also unrealistic to suppose that prices are reduced when costs fall as easily as they are raised when costs rise. The expression within the first brackets measures the change in (import *plus* labour) costs; while that within the second brackets determines whether the price rise (in the succeeding period) is more or less than or in proportion to the rise in costs. If percentage margins are constant, $U = 1$, and the rise in prices is proportionate to the rise in costs, i.e. the expression reduces to that within the first brackets.

45. The model is a cost inflation model in the sense that past cost or price changes are presented as important determinants of present price changes: but it is not necessary to suppose that they are the only influences. The influence of demand may be conceived as making itself felt in two ways: either by affecting the rate of increase in 'real wages and salaries'

(R); or by affecting profit margins (U). Any demand influence operating in one period will modify the prices passed on to the next period, and hence modify the working of cost inflation in all future periods. If large enough, a deflationary demand influence could inhibit cost inflation entirely. The proposed framework of thought offers one way of integrating 'cost' and 'demand' explanations of price changes.

46. All models of cost-price sequences must bear a strong family resemblance, and it may be appropriate at this point to apologize for inventing another. But different authors highlight different aspects of reality; and any great degree of realism and complexity is worth-while only when examining an historical situation. The model suggested here facilitates analysis of the effect of two matters which are important for the United Kingdom: the existence of an 'import component' of prices, and an upward trend in productivity. Analysis of the latter makes it convenient to work in terms of unit costs or prices, rather than with national income magnitudes such as figure in most models of cost-price sequences.[1] The general assumptions of the present model conform to those which Brown suggests hold good for the United Kingdom.[2] A detailed study of price changes in part of the period under review has been made by Parkinson; his general approach and conclusions appear rather similar to those adopted here.[3]

47. Before embarking on detailed analysis of the properties of the model, it may be helpful to point out that the forces affecting price behaviour may be divided into:

(i) Those which are *inherent* in the system and determine its stability characteristics. Thus a rise in real wages/salaries greater than productivity ($R > Q$), or a rise in percentage profit margins ($U > 1$) will cause prices

[1] For instance: J. Duesenberry, 'The Mechanics of Inflation', *Review of Economics and Statistics*, May 1950; and F. D. Holzman, 'Income Determination in Open Inflation', ibid. A graphical treatment of cost-price sequences is given by R. Turvey, in 'Some Aspects of the Theory of Inflation in a Closed Economy', *Economic Journal*, Sept. 1951. The effect of productivity changes can in many respects be assimilated analytically to the effect of a 'coefficient of adjustment' of wages to prices below unity; the latter is one reason for which a series of price adjustments may be convergent rather than explosive (see, e.g. Holzman and Turvey).

[2] A. J. Brown, *The Great Inflation* (London, 1955), suggests (p. 97) a mechanism which can be described as follows: 'The cost of living depends, in a simple way though with some time-lag, on two main factors: the internal wage level and the prices of primary commodities —which in the United Kingdom are mainly imported. The wage level again depends on two main factors, namely the level of employment and the cost of living, though in a more complicated way.' In his geometrical analysis of sequent price adjustments (ch. 5) Brown considers the case of a constant in the price equation leading to a convergent series of price adjustments: constant import costs are mentioned as one example. His main example is, however, rent, which he regards as a fairly constant item—an assumption which is not followed in the present model.

[3] J. R. Parkinson, 'The Terms of Trade and the National Income 1950–2', *Oxford Economic Papers*, June 1955. See also G. W. Maynard, 'Import Prices and Inflation: the Experience of the United Kingdom 1950–2, ibid., Oct. 1955; and the discussion between Parkinson and Maynard in the same journal, Feb. 1956.

to rise in the next period, even if there is stability in the prices inherited from the past ($P_{t-1} = 1$) or in costs injected from outside ($M = 1$).

(ii) *Exogenous shocks.* Thus previously rising prices ($P_{t-1} > 1$), or rising import costs ($M > 1$), will cause prices to rise, even if there are no inherent forces making for higher prices ($R = Q$, $U = 1$).

Each of these cases is discussed in turn below. A more systematic analysis of certain properties of the model is given in the Mathematical Appendix.

48. *Case I. 'Real wages/salaries' rising faster than productivity ($R > Q$, assuming $U = P_t = M = 1$)*

Suppose that R/Q is a constant K' ($K' > 1$)

Then
$$P_{t+2} = 1+aK'-a, \qquad \text{i.e. } P_{t+2} > 1$$
$$P_{t+4} = 1+aK'.P_{t+2}-a, \qquad \text{i.e. } P_{t+4} > P_{t+2}$$
$$P_{t+6} = 1+aK'.P_{t+4}-a, \qquad \text{and so on.}^1$$

Thus, provided R continues to exceed Q, prices will continue to rise indefinitely and at a continually increasing rate.

EXAMPLE A. *Effect of 'Real Wages/Salaries' rising faster than Productivity ($R > Q$ assuming $P_t = M = U = 1$, $a = 0{\cdot}80$)*

% *rate per 6-month period by which 'real wages/salaries' rise faster than productivity*	% *increase in final price over previous 6-month period*			
	period $t+2$	*period* $t+4$	*period* $t+6$	*period* $t+8$
1	0·8	1·4	2·0	2·4
2	1·6	2·9	4·0	5·0
5	4·0	7·4	10·5	13·4

We have forbidden ourselves to treat the converse case as symmetrical, i.e. 'real wages/salaries' increasing less than productivity, leading to a continuous fall in prices. However, where there are *other* influences making for price-increases, we may still treat an excess of Q over R as an offsetting force, damping or defeating a rising trend of prices (paras. 52–56 below).

49. *Case II. Profit margins rising ($U > 1$, assuming $R = Q$, $P_t = M = 1$).*

A *continual increase* in profit margins will likewise generate an indefinite, accelerating rise in prices. Thus, suppose U is a constant, K'', ($K'' > 1$).

Then
$$P_{t+2} = 1+bK''-b, \qquad \text{i.e. } P_{t+2} > 1$$
$$P_{t+4} = (1+bK''-b)(1+aP_{t+2}-a) \qquad \text{i.e. } P_{t+4} > P_{t+2}$$
$$P_{t+6} = (1+bK''-b)(1+aP_{t+4}-a), \qquad \text{and so on.}$$

[1] In fact the weight of labour costs, a, will change as the cycle proceeds. For the first few rounds of the cycle the variation will, however, be very small; and in the examples shown in the text, a tends to increase, thus slightly accelerating the rate of price increase. A more rigorous treatment is given in the Mathematical Appendix.

In fact (section (ii), below), variations in profit margins are likely to be a minor factor; any large change is unlikely to be continuous, and any continuous change is likely to be small. As shown later profit margins have, however, declined over the period under review, and this has been of some importance as a stabilizing factor.

50. *Case III. Inheritance of rising prices* ($P_t > 1$, *assuming* $R = Q$, $U = M = 1$)

Assuming that the inherent stability characteristics are neutral (i.e. $R = Q$, $U = 1$), any price rise inherited from a previous period will lead to a further price rise in the subsequent period, and thus in turn to further price rises. Thus

$$P_{t+2} = 1 + aP_t - a, \quad \text{i.e. } P_{t+2} > 1$$

$$P_{t+4} = 1 + aP_{t+2} - a, \quad \text{i.e. } P_{t+4} > 1$$

$$P_{t+6} = 1 + aP_{t+4} - a, \quad \text{and so on.}$$

It can be shown that unless the initial price rise is very large, the series will not be explosive but will eventually revert to stability;[1] and that the total rise in prices over the succession of periods will tend to a maximum (inclusive of any initial rise) of

$$P_t \frac{(1-a')M}{1-a'P_t},$$

where a' = the initial value of the weight of labour costs, which can be taken to be 0·80 approximately. Here we assume $M = R/Q = 1$. The induced price rises in the immediately succeeding periods will thus be smaller than but of the same order as the initial price rise; and the latter will be magnified several times before stability, after a period of years, is reachieved (see also Chart 2, below).

EXAMPLE B. *Inheritance of Rising Prices* ($P_t > 1$, *assuming* $R = Q$, $U = M = 1$, $a = 0{\cdot}80$)

Initial price increase (% *per 6-month period*)	*Subsequent price increase* (% *over previous 6-month period*				*Total % price rise to* $t+n$
	period $t+2$	*period* $t+4$	*period* $t+6$	*period* $t+8$	
2·5 . . .	2·0	1·6	1·3	1·0	13·9
5 . . .	4·0	3·2	2·6	2·1	31·2
10 . . .	8·0	6·5	5·4	4·5	83·3

[1] See Mathematical Appendix: the critical point is where $P_t \geq 1/a$. Since for 'business prices', $a = 0{\cdot}80$ approximately (Table VI), the initial price rise would have to exceed 25 per cent. per period, or 50 per cent. a year, before the series became explosive.

51. *Case IV. Once-and-for-all injection of higher import costs (assuming* $R = Q, U = 1$)

This case is really the same as Case III. For a once-and-for-all injection of higher import costs in the previous period is *one of the reasons* for which the present period may inherit a rising price trend. Thus if other factors making for higher prices are absent ($P_{t-2} = U = 1, R = Q$), then

$$P_t = (1-a)M_{t-1}+a.$$

But $$M_{t-1} > 1,$$

hence $$P_t > 1.$$

Then assuming that import costs are thereafter constant

$$(M_{t+1}, M_{t+2}, \ldots, M_{t+n} = 1)$$

we may write as for Case III

$$P_{t+2} = 1+aP_t-a, \qquad \text{i.e. } P_{t+2} > 1$$

$$P_{t+4} = 1+aP_{t+2}-a, \quad \text{and so on.}$$

It can be shown that assuming 'real wages/salaries' increase in line with productivity ($R = Q$) and that percentage profit margins are constant ($U = 1$), final prices must continue to rise until the total rise in prices is proportionate to the initial rise in import costs. That is, if import prices rise 10 per cent. and then are stable, prices (and therefore unit labour costs and unit profit margins) must on these assumptions also eventually rise by 10 per cent. above their starting-point.[1]

52. Exogenous shocks and inherent influences in fact work in combination. The most interesting combined case is:

Case V. The reaction of a deflation-biassed system to inflationary cost disturbances[2]

If 'real wages and salaries' increase less than productivity ($R < Q$) or if profit margins are continually squeezed ($U < 1$), the system will be somewhat less prone to generate a sequence of rising prices; and any sequence that does emerge will tail away more rapidly.

53. The inherent bias available on average over a period of years to offset exogenous price-raising influences cannot be expected to be very large. The average increase in output per head over the period 1948–54 was 2¼ per cent. a year (Table VII). Real wages and salaries, however

[1] This follows from the formula given in para. 50 (inserting $P_t = R/Q = 1$). A special case, in which the result may appear immediately obvious, is where productivity is constant, where labour refuses to accept any reduction in real wages or salaries, and where entrepreneurs and rentiers refuse to accept any reduction in real property incomes.

[2] We do not assume that the mechanism of price reduction is symmetrical with that of price increases. Any inherent price-reducing bias must therefore be taken to be potential, and realized only in conjunction with other influences making for price increases.

they may vary from year to year, could at best be assumed to be stable over a period of years.[1] To take $R/Q = 0{\cdot}99$ (per 6-month period) therefore seems an extreme assumption. Much the same effect would obtain with a fall in percentage profits and other property incomes by about $2\frac{1}{4}$ percentage points a year:[2] but a *continuous* profit squeeze of this order seems beyond the bounds of possibility.

54. The possibilities are thus adequately illustrated by taking

$$R/Q = 0{\cdot}99, \quad U = 1, \quad a = 0{\cdot}80.$$

The avoidance of a price sequence in subsequent periods requires that in each period (t),

$$aP_{t-1}\,R/Q+(1-a)M_t \leqslant 1,$$

or that if $M_t = 1$, then $P_{t-1} \leqslant Q/R$,

or alternatively if

$$P_{t-1} = 1, \quad \text{then} \quad M_t \leqslant \frac{1-aR/Q}{1-a}.$$

That is, neither the inheritance of final prices rising by 2 per cent. *a year*, nor the injection of import prices rising some by 8 per cent. *a year*, would, taken singly under these conditions, start a cumulative sequence. If, however, final prices in the preceding period were rising at a rate higher than 2 per cent. a year, or there were a once-and-for-all rise in import prices at a rate higher than 8 per cent. a year,[3] a cumulative sequence would even under these conditions still result.

55. Any cumulative sequence that did break out would, however, be considerably damped, compared with a situation where the inherent factors were neutral (i.e. compared with Cases III and IV, above). This is true even if productivity is rising only slightly faster than real wages and salaries. Chart 2 illustrates the damping effect of (i) productivity rising 1 per cent. a year faster than real wages and salaries ($R/Q = 0{\cdot}995$ for 6-month periods); (ii) productivity rising 2 per cent. a year faster ($R/Q = 0{\cdot}990$). Example C (Chart 2) shows the effect in damping a sequence generated by an inherited price rise (above a small threshold

[1] For short periods of time, money wages and salaries may lag considerably behind prices. In practice such temporary variations in 'real labour costs' may play a crucial part in preventing the emergence of a cumulative price sequence, or in reducing the impetus of any sequence which does break out (see Table XIV and discussion in para. 88).

[2] This follows from the weights which apply to the general equation set out in para. 41. For 'business prices' $a = 0{\cdot}80$, $b = 0{\cdot}35$ approximately (Table VI).

[3] A *continuous* rise of import prices of more than 8 per cent. a year would be more than the system could absorb. Prices would rise indefinitely at an increasing rate (at first less and later more than 8 per cent. a year). It can be shown that a once-and-for-all rise in import prices, however large, cannot generate an explosive price sequence, provided that there are no other influences making for price increases (i.e. provided that

$$P_t = R/Q = U = 1$$

see Mathematical Appendix.

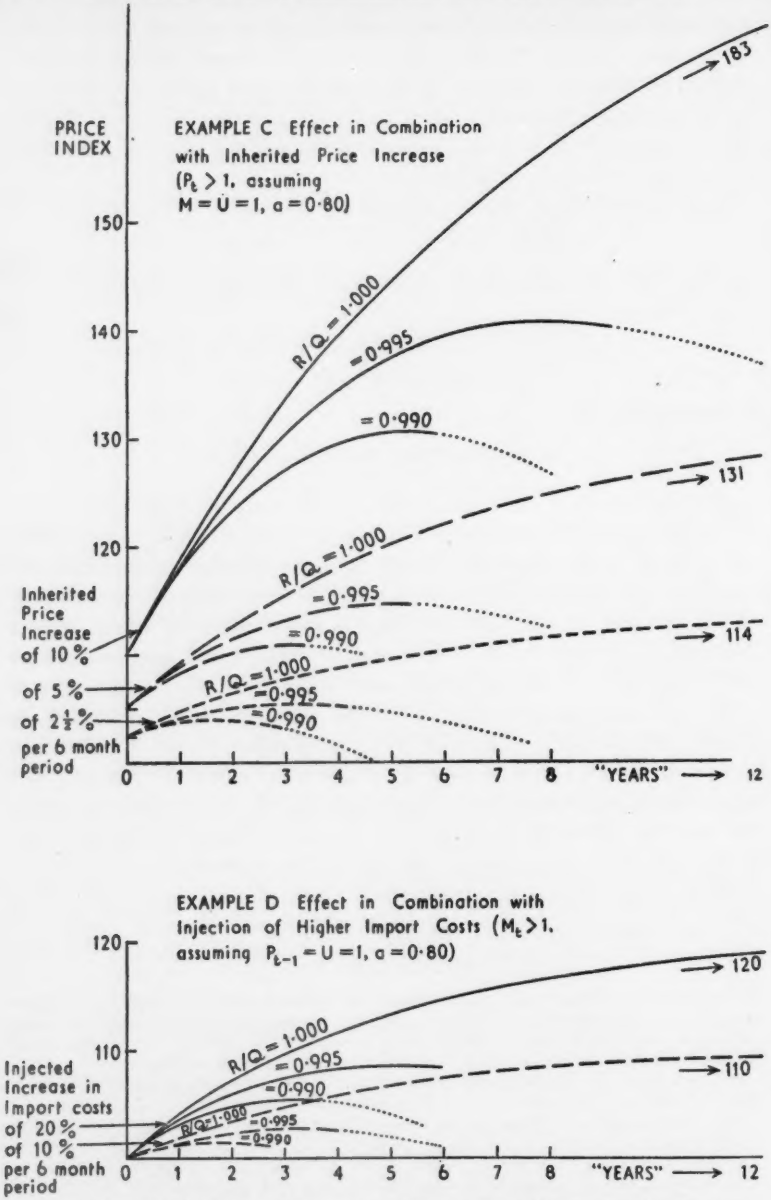

PRICE INDEX
EXAMPLE C Effect in Combination with Inherited Price Increase ($P_t > 1$, assuming $M = U = 1$, $a = 0{\cdot}80$)
150
140
130
120
183
R/Q = 1·000
= 0·995
= 0·990
131
114
Inherited Price Increase of 10 %
of 5 %
of 2½ %
per 6 month period
0 1 2 3 4 5 6 7 8 "YEARS" 12
EXAMPLE D Effect in Combination with Injection of Higher Import Costs ($M_t > 1$, assuming $P_{t-1} = U = 1$, $a = 0{\cdot}80$)
120
110
120
110
Injected Increase in Import costs of 20 %
of 10 %
per 6 month period
0 1 2 3 4 5 6 7 8 "YEARS" 12

CHART 2. *Illustrations of Damping Effect of 'Real Wages and Salaries' increasing less rapidly than Productivity ($R < Q$)*

value). Even with R/Q pretty close to unity, the sequence is brought to a halt after a price rise about half what would otherwise result.[1] The smallest inheritance shown (5 per cent. *per year*) is of particular practical interest (see section (iv) below): here the effect of $R < Q$ is to bring the price rise to a halt in 2 or 3 years, with a further price rise of no more than 5 per cent.

56. In the same way, a once-and-for-all injection of higher import costs (above a considerable threshold value) will lead to a *less than proportionate* total rise in final prices (compare Case IV). Example D (Chart 2) shows that even with $R/Q = 0{\cdot}995$, the total price rise will be proportionately less than half the rise in import costs, and will be brought to a halt within a relatively small number of rounds of the cycle.

57. If the economy's reaction to an injection of higher import costs is damped in this way, so that the total rise in final prices is less than proportionate to the rise in import prices, this implies a shift in the distribution of purchasing power over British output as between home factors and the foreign countries supplying us with imports. For prices equal import costs *plus* home factor costs: hence, if import costs rise *more*, home factor costs must rise *less*, than prices. Home factor costs can then purchase a smaller proportion (of a probably increased volume) of total output than before. The effect of the cost inflation will therefore (on certain further but generally plausible assumptions about the propensity to consume and invest) effect a *relative* reduction in home expenditure. If it can further be assumed that export demand will not expand (or not immediately) in line with foreign purchasing power, the process of cost inflation may also cause a net reduction in the pressure of demand.[2] It would appear therefore that a policy of price restraint may also operate to restrain demand.

(ii) The Behaviour of Profits

58. The two profit assumptions of the model set out in the previous section were that profits do not vary in such a way and by so much as to compensate for changes in costs; and that prices are determined by costs in a *previous* period. It is not necessary to assume that the relevant costs are the actual historical costs of the goods to be priced. But as a first step it is convenient to examine the behaviour of the margin above such costs. As already shown (para. 22), this is approximately measured by percentage trading profits inclusive of stock appreciation. The complex questions raised must be considered here with extreme brevity.

[1] Prices will rise for a time and thereafter fall under the influence of $R < Q$ (converse of Case I). If for the sake of realism we rule out the possibility of a downward sequence, the maximum can be taken as the point where price stability is reachieved.

[2] It is hoped to examine this question, which cannot be fully developed here, in a later paper.

59. The evidence for the period 1946–54 is summarized in Table IX. The 'property income' component of prices fell slightly (item 11): from 38 to 33½ per cent. The fall was confined almost entirely to non-corporate profits (item 4).[1] Rent's share (item 10) hardly fell. Company profits (item 6) fluctuated from year to year, but their share changed little over the whole period.

60. Though there is no space here for comment on all the year-to-year

TABLE IX

Percentage Profits and Other Property Incomes, 1946–54

	Percentages of value of business output								
	1946	*1947*	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*
Non-corporate profits	2·7	2·7	2·9	3·1	2·8	2·6	2·7	2·7	2·4
1. Farmers									
2. Professional persons	2·1	2·1	2·0	2·0	2·0	1·7	1·6	1·6	1·6
3. Other sole traders and partners	8·9	8·5	7·6	7·3	7·0	6·3	6·0	6·1	6·2
4. Total	13·7	13·3	12·5	12·4	11·8	10·6	10·3	10·4	10·2
less stock appreciation	..	..	*−0·5*	*−0·4*	*−0·5*	*−0·8*	..	..	..
5. *Total excluding stock appreciation*	..	..	*12·0*	*12·0*	*11·3*	*9·8*	*10·3*	*10·4*	*10·1*
Corporate profits									
6. Companies	15·9	16·9	16·3	15·8	17·3	17·8	14·7	15·2	15·7
7. Public corporations and public enterprises	3·0	2·9	2·7	2·8	3·3	2·8	2·2	2·5	2·9
8. Total	18·9	19·8	19·0	18·6	20·6	20·6	16·9	17·7	18·6
less stock appreciation	..	..	*−2·5*	*−1·4*	*−4·9*	*−4·6*	*+0·4*	*+0·5*	*−0·4*
9. *Total excluding stock appreciation*	..	..	16·5	*17·2*	*15·7*	*16·0*	*17·3*	*18·2*	*18·2*
10. Rent	5·2	5·1	4·5	4·4	4·5	4·1	4·2	4·4	4·6
11. Total trading profits and other property income	37·8	38·2	36·0	35·4	36·9	35·3	31·4	32·5	33·4
less stock appreciation	*−1·4*	*−4·8*	*−3·0*	*−1·8*	*−5·4*	*−5·4*	*+0·4*	*+0·5*	*−0·5*
12. *Total excluding stock appreciation*	*36·4*	*33·4*	*33·0*	*33·6*	*31·5*	*29·9*	*31·8*	*33·0*	*32·9*

Note: The value of business output is calculated as for Table II and this is gross of import content. Item 6 excludes, while item 7 includes, profits of companies at any time nationalized in period.

variations, a word must be said on the increase in profits in 1950 and the decline in 1952. They can probably be accounted for as follows:

(i) Commodity prices rose steeply in 1950–1. The time taken to pass on higher costs appears to have been less than the 'period of throughput': hence 'historical' profit margins rose (item 11, or 6). But costs were not passed on instantaneously: hence the profit margin over replacement costs fell (item 12, or 9).

(ii) Some of the fall in profits in 1952 was a reversion to 'normal' after this disturbance. Some was due to the fall in demand,

[1] All figures are as percentages of *total* business output. The fall in the share of non-corporate profits may therefore have been associated with a fall in their share of output. Since we are more interested in the behaviour of the whole than of the parts, this question is not pursued here. It is, however, interesting that, *within* the company population, larger (i.e. public quoted) companies have increased their profits more than smaller ones (see A. Luboff, 'Some Aspects of Post-war Company Finance,' *Accounting Research*, Apr. 1956).

reflected in the fall in output in that year.[1] When the rise in output was resumed, profit margins again rose.[2]

61. Percentage profits after deduction of stock appreciation (Table IX) also varied from year to year. In general the variation was opposite and about equal to the variation of trading profits inclusive of stock appreciation. We can express this by saying that the historical profit margin is not constant, but rather a function of the change in costs. Alternatively we can say that prices vary in proportion to costs lagged by (say) half the 'period of throughput' (i.e. in practice perhaps 4 or 5 months: see para. 29, above).

62. Examination of year-to-year changes shows that in most years the change in prices was in the same direction as the change in historical costs, but that the degree of change corresponded only roughly. The difference between the two indicates the effect on prices of variations in the historical profit margin.

Effect on prices of variations in percentage historical profits

1946–7	*1947–8*	*1948–9*	*1949–50*	*1950–1*	*1951–2*	*1952–3*	*1953–4*
+0·8	−3·2	−1·0	+3·1	−2·5	−6·2	+1·9	+1·2

In view of para. 60 above, it would be risky to conclude that the negative effect in 1947–8, or again in 1950–1 and 1951–2, was simply due to weaker demand, making it difficult to pass on costs. But some of the variation may well have been due to variations in demand, and the figures may perhaps indicate the order of magnitude of the possible effect of variations in demand.

63. This conclusion appears to be borne out by certain additional data. Table X shows that since 1948 company profits have tended to be rather higher than immediately before the war. This may well have been due to the distinctly higher level of demand, as evidenced by the very much lower level of unemployment. But if profit margins had been at the pre-war level, this would have reduced post-war prices by only 3 per cent. There was some decline in demand both in 1938 and 1952; but even in the industry groups most affected, percentage profits fell relatively little.

[1] Entrepreneurs were reluctant to discharge labour in face of the fall in output. This is something distinct from the effect of lower demand, and must alone have accounted for much of the fall in profits between 1951 and 1952. Some details for the cotton industry are given by H. A. Turner, 'Measuring Unemployment', *Journal of the Royal Statistical Society*, Series A, Part I, 1955.

[2] Non-corporate profits did not rise in 1950 or fall much in 1952. The reason may be that much of such profits are earned in two trades, building and distribution, which were little affected by the commodity price inflation or by the demand recession: *company* profits in these trades seem likewise to have been little affected (see Luboff, op. cit.).

64. Study of national income statistics for earlier periods does not throw much additional light on the question. A change in the ratio of profits to national income between one year and another by one percentage point means that if percentage profits (reckoned in this way) had remained the

TABLE X

Company Profits as Share of Turnover, 1936–8 and 1948–52

	Percentages							
	1936	*1937*	*1938*	*1948*	*1949*	*1950*	*1951*	*1952*
Food drink and tobacco	9·1	8·8	8·9	6·7	6·1	6·2	6·4	6·3
Metals, engineering, &c.	9·4	10·5	10·4	11·8	11·7	12·3	13·1	12·1
Textiles, leather, and clothing	6·3	5·8	4·2	11·5	10·8	12·1	10·6	9·1
Other manufacturing	11·9	11·8	10·7	12·5	11·3	13·0	13·3	10·9
Total manufacturing	9·3	9·5	9·2	10·6	10·1	11·1	11·3	10·1
Mining and quarrying *excluding coal*	17·3	18·0	17·9	17·8	18·1	17·5	19·3	17·0
Building and contracting	5·2	5·1	5·3	7·4	7·0	7·2	7·1	6·0
Transport and communication *excluding railways and shipping*	20·8	20·7	20·2	15·9	15·1	16·0	16·6	15·5
Distributive trades	5·1	4·5	4·0	5·7	5·2	5·2	5·5	4·7
Certain other services	10·1	8·8	10·1	12·5	12·1	11·7	11·4	9·7
Total all activities listed	8·3	8·0	7·7	9·2	8·7	9·1	9·4	8·3
As index, 1948 = 100	90	87	84	100	95	99	102	90
(*Company Profits as % of business output, index 1948 = 100*)	..	..	..	(100)	(97)	(106)	(109)	(90)

Source: The annual *Inland Revenue Reports* give profits as percentage of turnover for the years shown for 28 industry headings. Notable exclusions are: agriculture, coalmining, railways, shipping, water undertakings, most professional services, most insurance banking and finance, and undertakings operating abroad. Figures for various industries are known to have various defects and cannot be taken as highly reliable. They have here been combined into the nine groups shown, using as weights for this purpose the *estimated current turnover* of each industry. The aggregate percentages differ somewhat from those calculated by Kaldor (*An Expenditure Tax*, table 1, p. 150) and by Walker (*Manchester School*, Jan. 1954) where gross profits in a single year were used as weights. The aggregate percentage shows considerably less fluctuation than the estimates shown in Table IX (bracketed index in table).

same, prices would have been nearly[1] 1 per cent. different in the second year. The available estimates frequently show apparent variation of this order: but they can hardly be sufficiently reliable to use as evidence in this way.[2] Percentage profits appear to have fallen during the 1929–32

[1] This way of reckoning ignores import costs.

[2] Prest gives estimates for 1870–1914: before 1900, annual estimates of profits are particularly unreliable, since the original data is for 3 or 5 year moving averages (see 'National Income of the United Kingdom', *Economic Journal*, Mar. 1948). An estimate by Stone of national income for 1924–38, without detail of income components, is quoted by Prest (loc. cit.), and must be taken to supersede earlier estimates such as that by Bowley (*Studies in the National Income 1924–1938* (Cambridge 1942), table ix), for which, however, factor shares are available. Stone's estimate, with adjustment to exclude income from

depression: but how much is uncertain.[1] The mobilization period of World War II may be taken as an extreme case of increasing demand, but the figures do not show a very marked increase in percentage profits.[2] Though changes in demand almost certainly have some effect on the profit ratio, there seems, then, little evidence that the effect is spectacular.

65. We may perhaps conclude that the aggregate price level is fairly rigidly linked with the aggregate cost level; and that cost increases are passed on only after a delay probably of the order of 6 months.[3] But it would appear that demand conditions can have some influence on profits. Even if insufficient to offset, in the year it occurs, any large change in costs, even minor profit variations could considerably modify the total course of a cost-price spiral.

(iii) The Behaviour of Labour Costs

66. In the model set out in section (i), the main assumptions regarding labour costs were that the norm is for money wages and salaries to compensate for previous price increases; and that variations in money incomes due to other influences can be described in terms of variations about this norm—not a useful procedure unless previous price changes were a main influence on wages and salaries, and other influences either small, or stable, or readily identifiable. Of such other influences, the demand for labour was assumed to be one. Changes in output per head were treated as exogenous, and in particular as unconnected with the movement of wages and salaries. The questions raised are as complex as those discussed in section (ii): again there is space for only a brief discussion.

67. What we want to explain is the change in the average wage and salary earned in the business sector (estimated in Part I). We know that this moved in a similar way to average wage-earnings in the industries covered by the earnings inquiries (Table XI and A on Chart 3)—and,

abroad, is used by Phelps Brown and Hart to estimate profits for 1924–38 *as a residual* ('The Share of Wages in the National Income', *Economic Journal*, June 1952).

[1] According to Phelps Brown and Hart (loc. cit.), the share of home profits and rent fell 5 percentage points between 1928 and 1931 (35·7 to 30·9 per cent. of domestic national income). Bowley (loc. cit.) shows half this fall (34·7 to 32·3 per cent. of national income).

[2] The share of profits and rent (or of profits alone) in gross national product declined through the war. Profits and rent as a percentage of national product *excluding the income of the armed forces* seem to have risen by 1 or 2 points between 1938 and 1940 (or profits alone by 3 points). (See *Statistical Digest of the War* (H.M.S.O. 1951), table 180).

[3] It is not proposed to enter here into the question of whether the empirical observation that profit margins are fairly constant implies that firms adopt a 'full cost' pricing policy, and whether this implies that they do not aim to maximize profits. It may perhaps be said that what a single firm would do if left for a long time to work out its salvation in peace seems quite a different sort of question from the immediate reaction of a collection of firms to large and sudden changes in costs or in demand that affected them all alike. The two kinds of adjustment could well coexist; but evidence of the former could hardly be expected to emerge from analysis of the second, much cruder, type of reaction.

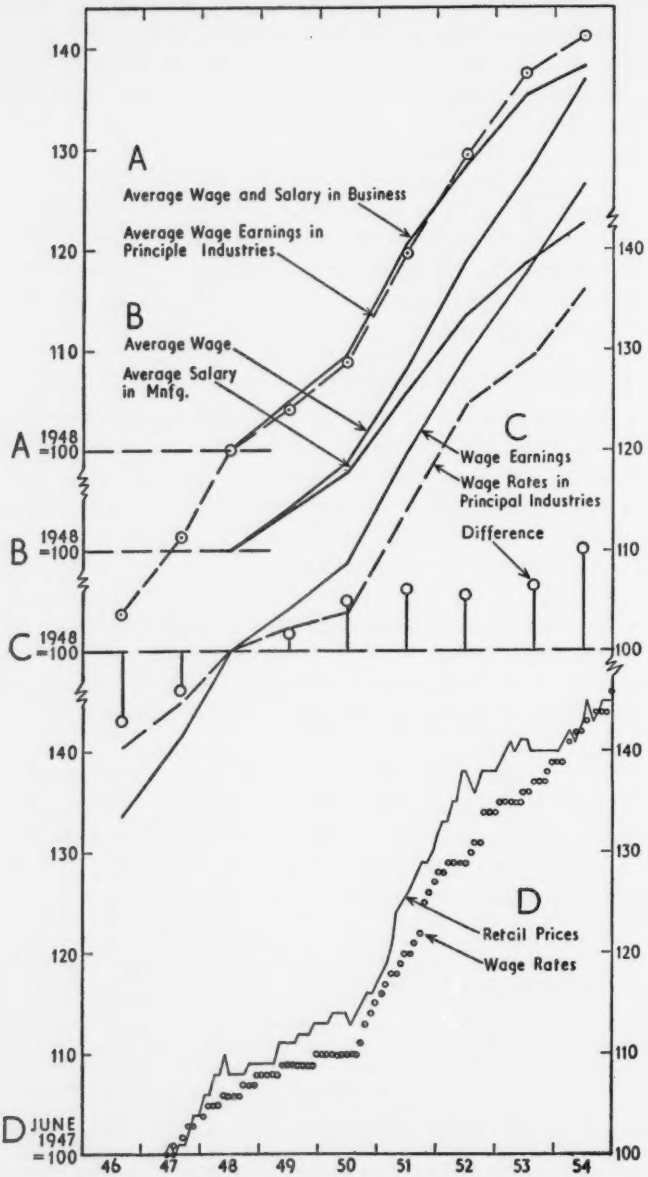


CHART 3. *Wages, Salaries and Prices, 1946–54*

hence, in a similar way to the average of wages and salaries outside the 'principal industries' covered by the inquiries.[1] Reliable information on salary movements is available only for manufacturing.[2] In most years such salaries seem to have risen more slowly than wage earnings, though not than wage rates (see B on Chart 3).

68. The explanation proposed for these movements relates primarily to wage earnings in the industries covered by the earnings inquiries (roughly those included in the index of production). It does not appear,

TABLE XI

Wages and Salaries, 1948–54

(Indices, 1948 = 100)

	1948	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*
1. Average wage/salary in business sector	100	105·0	109·5	120·7	128·5	135·3	143·1
2. Wage earnings in 'principal industries'	100	104·1	108·9	119·8	129·3	137·2	146·1
3. General index of wage rates	100	102·7	104·7	113·4	122·9	128·5	134·2
4. Wage rates in 'principal industries'	100	102·4	103·8	113·5	123·5	129·4	135·9
5. Earnings 'margin'	0	1·7	5·1	6·3	5·8	7·8	10·2
6. In manufacturing:							
(*a*) Average wage	100	104·2	108·8	118·4	129·1	137·3	146·7
(*b*) Average salary	100	104·0	108·1	116·2	123·5	128·3	132·4

Sources: 1. From Table VII above (includes employer's insurance contributions).
2 and 4. Ministry of Labour earnings inquiries, average for April and October.
3. Ministry of Labour monthly index.
5. Item 2 *less* item 4.
6. Censuses of production.

however, to be stretching things too far to suppose that the same explanation will explain events elsewhere, either because the mechanism is similar; or because the former industries set the pace, and wages and salaries elsewhere follow. It seems best to deal separately with changes in rates, and changes in the excess of earnings over rates, which we will call the 'earnings margin'. We know that about three-quarters of the rise in earnings within the 'principal industries' is accounted for by the rise in *wage rates* (see C on chart).

69. There are two main reasons for supposing that changes in prices are the main determinant of wage rates. First, we know they are very important in the motivation of wage negotiations, being, for instance, almost always mentioned in wage claims. Second, that with the exception of the

[1] Wages in the industries covered by the inquiries account for almost half the wages and salaries outside government service. Wages outside these industries make about another quarter; salaries in all industries, the remaining quarter.

[2] Of the salaries earned in the business sector, manufacturing accounts for about one-third.

1948–50 wage freeze and the very rapid rise in prices in 1950–1, the index of wage rates appears to have kept remarkably close to the index of retail prices (see D on Chart 3). This evidence is not as good as it looks, for the two series would not be so similar if recalculated with a different base period. Nevertheless the widespread use of the official index based on June 1947 must have given even illogical inferences based on it an influence upon events.

70. The advance of both wages and prices has been fairly continuous, and the dates at which a more rapid increase began or ended are not clearly defined. It is therefore difficult to demonstrate statistically how long it takes for wages to react to a price increase. We know, however, that the process of wage negotiation takes several months, and trade unions in this country do not yet appear to anticipate price increases before they occur. Study of the administrative arrangements suggests that the time lag must be about 6 months, though there is of course nothing immutable about this.[1]

71. We still have to consider how far the reaction of wage rates to price changes might have been different if demand had been lower. Here it seems impossible to be dogmatic. For this country we have to go back to before the war to find appreciable variations in the pressure of demand. If we take percentage unemployment as a measure of demand, the evidence suggests that even large changes in demand made relatively little difference to the rate of wage increase.[2] Since the war the level of demand has of course differed markedly as between different countries; but comparison of their experience does not suggest that this made a great difference to the pace of wage increase.[3] This is not to deny that a major deflation, expressly and explicitly undertaken with the object of affecting

[1] See A. T. Peacock, W. J. L. Ryan, 'Wage Claims and the Pace of Inflation', *Economic Journal*, June 1953. The best fit between the official wage rate index and the official index of retail prices for the period 1947–54 is obtained by lagging prices 6 months, *provided the official June 1947 base is used*. This, however, shows nothing unless it is assumed that trade unions in trying to keep wage rates in line with prices were thinking in terms of indices so based. In fact of course this probably was the case. Such as it is this evidence depends mainly on behaviour during the 1950–1 episode, examination of which leads A. J. Brown to a rather guarded conclusion about the time lag (see *The Great Inflation*, p. 125).

[2] See *The Great Inflation*, ch. 4 and particularly diagram 14, in which annual changes in wage rates are plotted against percentage unemployment for the period 1920–51. Since changes in wage rates were often accompanied by price changes in the same direction, this presentation probably exaggerates the influence of unemployment changes *unaccompanied by price changes*. Even so, the effect of unemployment appears very small: e.g. an increase of unemployment by 3 to 5 per cent. might make a 1 per cent. difference to the rate of increase of wage rates.

[3] See *Economic Survey of Europe in 1955*, pp. 160–2 and chart 12: 'The chart may serve to illustrate how easily the role of full employment in creating wage inflation can be exaggerated. . . . The conclusion that can be drawn from the chart is only the negative and vague one that in the actual experience of the past seven years there was no clear and consistent correlation between the movement of nominal wages and the degree of employment.'

wages, might succeed in doing so. But the effect would surely depend more on the declared intention and political power of the government, than on the natural and unheralded effect of the deflation itself. An economist may perhaps claim to be excused from predicting the outcome.

72. Even if the level of demand had little effect on wage rates, it might still have an influence on wage earnings. Over the 6 years 1948–54, earnings increased 10 per cent. more than wage rates (Table XI: item 2 *less* item 4 *equals* item 5). It appears[1] that this is accounted for chiefly by three factors:

(i) Changes in overtime and short-time, consequent on changes in hours of work (which, except for an interruption in 1952, have increased).

(ii) Higher wages paid to pieceworkers, consequent on the growth of output per head (a third of the operatives in the 'principal industries' work under some system of payment by results).

(iii) 'The practice of paying fewer workers the minimum standard rates . . . and the increasing amount of extra payment. . . .'

73. In the model set out in section (i) it was assumed that changes in wages and salaries were unconnected with changes in productivity. The first two factors listed above mean that this was not entirely true. Between them they may account for a rise in earnings between 1948 and 1954 of something of the order of 5 per cent., which is fairly large in relation to the increase in output per head in this period (14 per cent.: see Table VII). In interpreting the model, it must therefore be remembered that wages are partially geared to productivity changes. This makes it less likely that 'real wages' will increase less rapidly than productivity, upon which so much of the stabilizing properties of the price model depends.

74. It also follows, however, that the first two types of increase of wage earnings have little effect on labour costs *per unit of output*. Though high demand is likely to favour all three reasons for higher earnings, it is only in *the last case* that a perceptible effect on costs seems likely.[2] The importance of such 'bonus' wage payments, however, seems rather small; at most, they can hardly have added ½ per cent. a year to wage earnings.

[1] See G. Penrice, *Earnings and Wage Rates, 1948–1955*, London and Cambridge Economic Service, Dec. 1955. The effect of sex-age changes, and of shifts between industries, though significant in some years, has been a minor influence.

[2] Hours of work appear to vary to some extent with the pressure of demand; but output per head may perhaps only vary with demand in the short run, e.g. as in a recession. Though overtime payments add appreciably to marginal labour costs, the effect on average labour costs will be quite small. The argument in the text assumes that it is the latter which determine prices, an assumption which may not be completely true.

Detailed study of wage changes in particular industries might give greater insight into the processes at work.[1] But the provisional conclusion would appear to be that demand conditions have only a limited influence on labour costs. The *cumulative* effect on prices of even small changes in labour costs could, however, be significant.

75. It would appear then, that the assumptions of the model concerning labour costs bring out some of the most important aspects of reality. In particular, it seems realistic to treat price changes as a main influence,

TABLE XII

The Behaviour of Labour Costs

	Annual percentage changes						
	1948 –49	*1949 –50*	*1950 –51*	*1951 –52*	*1952 –53*	*1953 –54*	*Average yearly change, 1948–54*
1. Rise in retail prices lagged six months .	4·5	3·4	4·1	11·9	5·6	1·4	5·1
2. Rise in average business wages and salaries .	5·0	4·3	10·2	6·5	5·3	5·8	6·2
3. Ditto deflated for lagged price changes. .	0·5	0·9	5·8	−4·9	−0·3	4·3	1·0
4. Change in output per head .	3·3	1·3	3·0	−0·7	3·3	3·1	2·2

Note: Item (1) is from the retail price index, i.e. the figure for 1948–9 shows the percentage rise between mid 1947–mid 1948 and mid 1948–mid 1949. Items (2) and (4) are from Table VII.

operating with some delay, upon the level of money wages and salaries; and the influence of demand as a minor influence, able to modify, but not inhibit, the working of any pronounced cost-price spiral. This is enough to make the model a useful tool of analysis. This does not mean that the

[1] If all industries are taken together, rates and earnings appear to go up more or less in line. In each separate industry, however, changes in wage rates are made at infrequent intervals. There is reason to believe that the 'bonus' element in wage earnings tends to grow while wage rates are unchanged, and to be eliminated with each new wage settlement. By the end of a wage-settlement period, bonuses could well add several per cent. to earnings, their rate of growth probably depending on the demand for labour. (An unpublished study by S. N. Marris shows that this was true of the United Kingdom paper trade, 1948–54.) It could furthermore be argued that each new wage rate will depend on the level to which bonuses had grown since the last settlement. The rate of increase in wage rates would thus depend, indirectly, on the level of demand. This, however, contradicts the conclusion accepted in the text above, which appears fairly well grounded on historical observation, that demand has had little influence on wage rates. Detailed studies of wage changes in particular industries would therefore be needed to establish the later steps in the argument.

mode of description fits the real world in exact detail; nor does it deal with everything that was in fact important.

76. The facts, expressed roughly in the terms of the model, are shown in Table XII: instead of periods of 6 months, annual changes are shown. The prices whose changes are shown are (as in the model) lagged 6 months: the annual change in 'real wages and salaries' (item 3), being dependent on the time lag, is somewhat arbitrary. Over the period as a whole, and in most years, the degree to which wage and salary increases over-compensated for previous price changes was less than the increase in productivity; the average difference was 1 per cent. a year, enough to contribute significantly to price stability. (The margin does not critically depend on the price-wage lag assumed).

77. When the annual changes in wages and salaries are examined, however, it becomes impossible to believe that the explanation was always as assumed in the model. Thus the relatively small increase in wages and salaries in relation to the change in prices, in the first 2 years shown in the table, may have been due to the wage freeze. The large increase in 1950–1 may have been due to the breakdown of the wage freeze—though it may have owed something also to the rise in prices at the *end* of 1950, i.e. current not lagged prices may have had an influence. In 1951–2 wages and salaries rose considerably less than prices (whether current or lagged). Opinions may differ on the reason. It could be claimed that this was because of the recession in demand in 1952, and it is certainly true that the earnings margin fell, in that year alone (Chart 3: but see also para. 74, above). But it seems equally plausible to suppose that it was because prices rose so rapidly that wages temporarily could not keep up. In this case we would have to modify the assumption of 'full compensation for previous price increases' for the short period, though it still appears realistic as a long-run assumption. In either case the point is of considerable theoretical importance; it was also important in effect, for the *timing* of cost increases can greatly modify the course of a cost-price spiral.

78. One further important qualification remains to be made. The model contains no specific assumption about 'autonomous' wage increases. In fact, however, it may well be that wages would tend to go up *even if no price increase had occurred*. If so, there would be a minimum rate of wage increase—a rate, moreover, which might well tend to increase, as the habit of annual wage increases got engrained. It is therefore impossible to be confident how wages and salaries would have behaved if prices had risen less. For the particular period under review it seems safe to say that some of the rise in wages was because prices rose because wages rose and so on, as assumed in the model. But some of the iterative characteristics of the model may be more apparent than real.

(iv) Historical Analysis of Price Changes during the period 1946–54

79. In this section we endeavour to weave the threads together; and, by applying the analytical methods developed earlier, try to answer the question why prices rose in the post-war period.

80. The prices most relevant to wage determination are working-class consumers' prices, whose movement may not be precisely parallel to that of business prices, which the model seeks to explain. Though the general development of all types of final prices was fairly similar (Table IV), there were minor but significant differences, clearly apparent when year to-year changes are examined (Table XIII).

TABLE XIII

Discrepancy between Retail Prices and Business Prices

	Annual percentage changes							
	1946 –47	*1947 –48*	*1948 –49*	*1949 –50*	*1950 –51*	*1951 –52*	*1952 –53*	*1953 –54*
Business prices . .	6·4	8·1	2·3	2·8	11·5	7·4	−0·6	0·9
Price of final outlay .	*7·8*	*7·5*	*2·5*	*4·0*	*11·2*	*6·2*	*0·5*	*0·9*
Consumers' prices. .	*6·9*	*7·5*	*2·4*	*3·3*	*8·2*	*5·7*	*1·7*	*1·6*
Retail price index .	..	..	2·8	2·7	9·6	8·8	2·9	2·2
Discrepancy between business and retail prices . . .	..	..	+0·5	−0·1	−1·7	+1·3	+3·5	+1·3

Note: For original series of first three items see Tables IV and VIII. The 'discrepancy' is calculated by division not subtraction of the price ratios.

In 1950 retail prices rose less rapidly than business prices (or than final prices in total). Thereafter, they rose more rapidly.[1] Reference must be made to these discrepancies in the historical interpretation below.

81. In analysing the generation of price increases, we will deal only with *business prices* as defined in this paper. A purely statistical analysis of the cost composition of price changes was given in Part I. This showed that of the change in prices between 1946 and 1954, almost four-fifths represented the increase in labour and other home factor costs. It will be apparent, in the light of the more detailed sequence-analysis set out above, that this probably gives a very misleading idea of the *causation* of the price change. The rise in unit labour costs, and in profits per unit of output, did of course occur. But much of this should probably be regarded as an induced rise, and thus a secondary effect of primary originating forces. The rise in wages and salaries in each year was little more than required to compensate for previous price changes (Table XII). Thus, if it is

[1] This was partly due to the reduction of subsidies and partly to the different development of the factor cost of food and of services.

accepted that wages and salaries will inevitably rise at least as much as prices, and provided also that it is believed that wages and salaries would have risen much less if prices had been more nearly stable, the greater part of the rise in wages and salaries could be treated as an induced rise. The proportionate contribution to prices of profits and other property incomes has been not merely constant but slightly falling (Table IX). Thus, if it is accepted that percentage profit margins are inevitably fairly stable, all the rise in money profits per unit of output must be treated as an induced change.

82. The main originating force was the rise in import prices, injected into the system in two main bursts. The effect was the greater because the system inherited a rising price trend from the war-time period. From the point of view of the present study this can be taken as an extraneous influence without inquiring into why prices were then rising. The effects of both were however powerfully damped by the rising trend, marked and fairly continuous, of productivity; and (to an extent, however, hardly appreciable) by the percentage fall in gross profit margins. We will now apply the results of the formal analysis set out in section (i) in order to consider how in general the system might be expected to react, under the conditions and to the shocks to which it was in fact subject. The order and timing of events may, however, have a crucial influence upon the subsequent course of a cost-price sequence. To this, no general analysis can do justice; and we shall have later to supplement it with a year-by-year analysis of how the economy reacted.

83. If the model set out in section (i) correctly describes in main outline the complex nature of reality, the reaction of the economy to any one event will depend on its general posture at the time. In particular, its reaction to a rise in prices inherited from the past, or to a rise in import costs injected from the world outside, will depend on how quickly productivity is rising; and on whether the inheritance or injection occur singly or in combination.

84. During the early part of the period the *inherited price rise* was probably of the order of 5 per cent.[1] In 1949 and 1950 (though probably not in the first post-war years) productivity was rising more rapidly than the excess increase of wages and salaries over previous price increases. By itself, therefore, the inherited rise in prices might have resulted in only a moderate inflation. If we can assume that the rate of advance of money wages and salaries would have slowed down with the slowing down of prices, the repercussions could have been reduced to vanishing-point in the course of a few years. (See Example C, Chart 2:

[1] Subsidies were used to keep the pre-1947 official cost of living index stable. But the weights used in calculating it were fairly obviously outmoded, and the index in consequence was rather generally discredited. The average value of consumer goods and services rose by about the amount stated between 1945 and 1948 (see *London and Cambridge Economic Service*).

even with a value of R/Q as high as 0·995, the repercussions of an initial price rise of 5 per cent. per annum, or 2½ per cent. per 6-month period, would fade out in 3 years, the *additional* rise in prices being no more than 3 per cent.)

85. From the beginning to the end of the period 1946–54 (i.e. ignoring the 1951 peak), the cost of imported materials rose 80 per cent. (Table VI) or about 10 per cent. a year. If this had been a smooth and continuous rise, and if there had been no inheritance of rising prices, the economy might have been able to absorb the rise in import costs. For the weight of import costs is one-quarter that of labour costs: hence a rise of 10 per cent. a year in the former could be offset by an annual 2½ per cent. fall in labour costs. This could just about have been managed if real wages and salaries (and, on the assumptions, money wages and salaries) had barely increased at all. Even on the most favourable assumptions, therefore, the economy could hardly be expected to have suffered so large a rise in import costs without generating a cumulative price sequence.

86. In fact, however, rising import costs were superimposed upon an inheritance of costs and prices which was not allowed time to work itself out. The general effect to be expected of such a combination can be seen as follows. The rise in import costs was so large that to offset it would have required the *whole* of the damping effect of productivity increases. Nothing, therefore, was available to damp out the price rise inherited by each period from its predecessor. Under such circumstances, if developments were smooth and continuous, an indefinite price rise could be expected, though not necessarily an accelerating one.[1] It is not difficult, therefore, in the rather general terms of the argument so far, to show why, between 1946 and 1954, business prices had to rise by 45 per cent., or 5 per cent. a year.

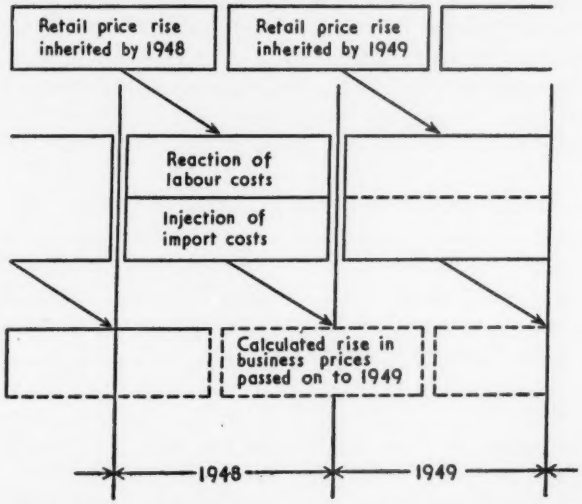
87. Actual history is not a smooth and continuous process, but a chapter of discontinuities and accidents, whose result can be quite different from the stylized end-product of a model-builder. Table XIV is an attempt to lay out the sequence of events as it occurred, year by year. It differs from the model set out in section (i) in dealing with the actual values of the coefficients, rather than with assumed values; but it follows the model in assuming:

(i) that wages and salaries are influenced by price changes lagged 6 months;

(ii) that prices change in proportion to the sum of import costs and labour costs with a lag of 6 months.

[1] In this case, the increase in output per head is no larger than the *weighted* import cost increase. The case is roughly analogous to that where the increase in output per head is no larger than the increase in real wages and salaries (Case III in section (i) above). In either case, none of the productivity effect is available to damp out an inherited rise in prices.

The sequence of events must therefore be pictured as follows:


Retail price rise inherited by 1948
Retail price rise inherited by 1949
Reaction of labour costs
Injection of import costs
Calculated rise in business prices passed on to 1949
1948
1949

In most years the calculated change passed on to the next year in business prices (bottom row of table) corresponds fairly well with the actual rise in retail prices inherited by the next year (next column, top row of table). Exact correspondence is not to be expected. Discrepancies must be due either to the period of throughput being other than 6 months as assumed; to variations in the percentage historical profit margin taken on business output; or to a discrepant development as between business prices and retail prices (para. 80 above).

88. With the help of Table XIV we may now attempt to pick out the main steps in the sequence of events, starting with 1949 (before which reliable estimates are not available):

(i) In *1949* and in *1950* the rise in wages and salaries was moderate (perhaps because of the wage freeze). This, together with the rise in productivity, meant that labour costs were adding little to prices. If import costs had not risen in 1950, the spiral might soon have petered out.

(ii) In the event, import prices did rise in the second half of 1950; and an appreciable rise in prices was inherited by *1951*. Its effect was greatly reinforced first by the large increase in wages and salaries that year (perhaps due to the thawing of the wage freeze, combined with the general expectation that prices would go on rising); and second by a new and even larger injection of higher import costs.

(iii) The price rise inherited by *1952* was so large that, left to internal influences, it could hardly have failed to perpetuate itself for 5 years or so, magnifying itself several fold in the process. The *immediate* reaction of wages and salaries was, however, relatively very moderate (see para. 77). This, together with the small *fall* in

TABLE XIV

The Generation of Price Changes: Annual Analysis, 1946–54

	Annual percentage changes over previous years							
	1947	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*
Inherited rise in prices (retail prices lagged 6 months)	*about 5*	*about 5*	4½	3½	4¼	11½	5¾	1¼
Rise in wages and salaries	*nearly 10*	*nearly 10*	5	4¼	10¼	6½	5½	5¾
Change in output per head	*small*	*small*	3¼	1¼	3	−¾	3¼	3
Change in unit labour costs	..	..	1¾	3	7	7½	2	2½
Effect of labour costs on prices	*over 5*	*over 5*	*1½*	*2¼*	*5½*	*6*	*1½*	*2*
Change in import costs	22½	15	0	17	41	−5	−16	−3
Effect of import costs on prices	*4½*	*3*	*0*	*3½*	*8¼*	*−1*	*−3¼*	*−½*
Calculated change in prices inherited by next year (i.e. with 6 months lead)	*about 10*	*about 10*	*1½*	*5¾*	*13¾*	*5*	*−1¾*	*1½*

Note: The calculation is for business prices and assumes fixed weights (including constant historical profit margins) for the import and labour cost components. Reliable estimates are not available for the first 2 years, 1947 and 1948.

import costs, greatly damped the spiral. Thus even though output per head fell, the price rise was moderate.[1]

(iv) In *1953* the rise in wages and salaries was again only moderate. Output per head rose strongly. Falling import costs now exerted a powerful damping effect, which was large enough to put an end to any repercussions of the Korean boom which still remained in the system.

(v) With *1954*, therefore, we seem to start a new chapter. Wages and

[1] The 'calculated' price rise does not show the effect of two other changes: the fall in historical profit margins (Table IX); and the 'discrepant' rise in retail prices (Table XIII). In fact, these more or less cancelled out.

salaries seem by then to have been increasing under their own steam, without much stimulation from price increases. It seems clear that the rate of increase in relation to the rate of increase in output per head would, if persisted in, give rise to something hardly met with earlier in the period—a purely domestic generation of price inflation. (The possibility of an accelerating or 'explosive' price development under these conditions is illustrated by Case I of the algebraic analysis.)

89. If the whole development had to be summarized very shortly, one would say that its most significant feature was the way the 'Korean' rise in import costs first drove the United Kingdom price level strongly upward; and then how the subsequent fall in import costs, partial though it was, yet *in the event*, to which many things contributed, seems to have been enough to kill completely the secondary repercussions remaining from the former rise, leaving prices at a permanently higher level. In a more general sense, hardly dealt with in the model, one can say we are still suffering from the experience. For it must only too strongly have confirmed the habit and expectation of a continually increasing level of wages, salaries and prices.

90. What would have happened if the level of demand had been lower? It has earlier been suggested that its effect would have made itself felt in three ways: the rate of increase of wage rates might have been slightly less; the 'bonus' element in wage earnings might have been smaller; and percentage profits might have fallen rather more than they did. But reasons have been given for supposing that the effect of lower demand, even acting in all three ways, would still be small; it would be in line with the earlier discussion to suppose that the retarding effect on the price rise at each stage of the process might be of the order of 1, 2, or 3 per cent. If this is accepted, it would follow that lower demand could not have counteracted cost injections as large as those which occurred, though it could have modified the economy's reaction to them.[1]

91. If this argument is correct, a policy of preventing the quantity of money increasing might have prevented an increase in the value of output, but chiefly at the cost of the volume of output, rather than *via* more stable prices. But the argument should perhaps not be pushed too far. The bricks of which it is built are empirical generalizations from observation of a relatively short period of history; and cannot be taken to be immutable.

[1] If at each stage of the cost-price spiral, profits had fallen more than they did, the price rise inherited at each stage after the first would also have been less. Suppose profits had fallen in each period by 3 per cent., so directly reducing prices at each stage by 1 per cent. In an open economy, the cumulative effect over a period of n years would be less than n per cent.; for the inherited price rise, it is to be supposed, operates on labour costs, which are only part of total costs.

A severe deflation might have radically altered the economy's modes of reaction. In this country, in the years immediately following the first world war, and of course in other countries in more recent periods, there was certainly more price flexibility, which can only be explained by supposing either that wages were less rigidly linked to prices; or that profit margins were more variable, so that prices were less rigidly linked to costs. An economy which was in this sense more flexible would be much less prone to cost inflation, and much more open to the influence of demand. While more subject to disturbance from the side of demand, such an economy would also be more amenable to policies which operate *via* their effect upon demand.

(III) Implications for Anti-Inflationary Policy

92. Economic analysis has to proceed by isolating what appear to be main features of reality, and giving a simplified account of their working. There are dangers in straightway going on to draw practical conclusions. It is easy to forget features which though important lie outside the chosen scheme of analysis. Little has for instance been said here about the possible tendency of money wages to increase willy nilly, whatever happens to prices; with little evidence to show its importance, there seems little systematic to be said (see para. 78). It is easy also to make reality appear too tidy: in real affairs the timing of events, which appears accidental to an analyst surveying the past, may be crucial (see paras. 88–89).

93. The purpose, therefore, of the present study is not to propose practical conclusions, but to present facts and arguments for discussion. But the test of thought is action. Discussion of practical implications may help therefore to crystallize the issues. Only the prevention of price increases will be discussed, though in fact this is one aim of policy among several and the various objects of policy cannot always all be achieved together.

94. Advocacy of one policy rather than another does not depend only on economic analysis of cause and effect. In practice there are limits to what will be accepted as politically possible or socially desirable, roughly indicated by the temper of political opinion. Thus a kind of pre-selection takes place, and at any time only certain issues seem live ones. A more drastic (or 'liberal') financial policy after the war might for instance have altered not only events, but also the economy's pattern of response to events. It is possible that in this way the economy might have been rendered much less a prisoner of cost inflation, and much more vulnerable to fluctuations in demand (see para. 91, above). If, however, this ever was a serious possibility, it was not one whose merits, and demerits, were very

seriously discussed. In view of what is said later (para. 103) about the possible need to alter the economy's patterns of behaviour, this issue should perhaps not be entirely brushed aside. But we may start by discussing what could be done with the kind of economy which existed, whose workings this paper has sought to describe.

95. Its most general characteristic seems to be that the various groups into which the economic population is divided have rather strongly entrenched claims upon the social product; and that, in consequence, factor shares are relatively immobile. If the different groups pitch their claims too high, the impossibility of satisfying all may itself lead to inflation. But even if this does not happen—and the previous discussion suggests that it was not the main cause of difficulty in most of the post-war period—prices and costs and the relations between them will be rendered very sticky. The economy will be slow to adjust to outside price changes; but once a price adjustment is started, it will be equally slow to stop. The system will, in a sense, have a long memory.

96. This kind of economy has both advantages and disadvantages. When one lives with it, the advantages are easily overlooked. Creeping inflation is irksome, but runaway inflation is disastrous, and once experienced never forgotten. Prices in this country appear unusually insensitive to demand; and inability to get excited is at least a guarantee against a wild instability of prices. The fact that the United Kingdom has never had and is not likely to have a hyperinflation, gives it a greater tolerance of small price increases, as compared with other countries whose defence is less strong. The insensitivity of prices to demand may be considered advantageous also in that it operates, like direct controls, to 'suppress' excess demand. With the disadvantages we are generally familiar. Insensitivity to demand means inflexibility of relative prices, and inflexibility in the pattern of output in the face of changing needs. It also means that the economy is open to cost influences; and, as a matter of present fact, their net effect tends, rachet-like, to be price-raising.

97. The dominant impression one is left with is perhaps the quality of perseveration. If there are fairly rigid cost-price and price-cost relations, operating with a time lag, the system must tend to reiterate whatever it inherits from the past or has injected from the outside. Though its reactions were in fact damped by various factors, the system was uncomfortably close to the point of perpetuating indefinitely any price change handed on to it. If the economy were immune from outside disturbance, this might have been satisfactory: though no firm conclusion is possible (see para. 78), prices might have been fairly stable. But the United Kingdom is not a closed economy. Given the type of economy we had, and granted that it had to be exposed to the kind of external cost inflation to which

it was subjected, it is difficult to see how a considerable price rise could have been avoided.

98. It was suggested in the course of the analysis (para. 88) that somewhere about the end of 1953 we entered a new phase, in which the causes of price inflation were purely internal. One should beware of applying the logic of a formal model too literally, but the dangers can perhaps be judged from the following formulation: if wages rise anyhow more rapidly than productivity, and if they rise even more rapidly when prices rise, the rise of prices will be not only continuous but accelerating for as long as these conditions continue.

99. Though the present situation appears to differ from that of earlier post-war years, two conclusions about government policy apply generally. First, policies to reduce demand may not be a complete answer. If the system were rigidly cost-determined, policies which operated on the economy *via* the influence of demand, though they might well be advisable for other ends, would be of no avail to stop prices rising. Room was left in the analysis for the possible influence of demand; but the evidence suggested that its likely effect was limited, and hence slow working. On this point opinions may differ; but if the broad judgement is correct, it follows that measures to affect demand are only one of the means which can be used.

100. The second general conclusion is that once a cost-price sequence has started, government policy cannot hope to make a quick or drastic cure. Any success, nevertheless, will be cumulative. The moral presumably is, the quicker anything to be done is done the better. Some of the possibilities may be worth remarking on.

101. If a cost-price spiral is already under way, there is scope for delaying tactics. The main examples are a wage freeze, or price restraint or control. In special cases (as to smooth out a foreseen hump in the trend of prices) there may also be a case for using subsidies; but any direct advantage has to be weighed against the disadvantageous effect on demand. Such delaying tactics are often descried as an attack on the symptom not the root of the evil, which may be partly true in any actual case. But the analysis given above suggests the cure may be more radical:

(i) A cost-price spiral stopped at source avoids not only the immediate price increase but all the repercussions through the future years which it would generate if allowed to proceed.

(ii) Productivity increases can have an important damping effect, *given time*: the longer each stage of the spiral is drawn out, the greater the chance that it will be offset by the cost-reducing effect of rising productivity.

(iii) A damped cost-price spiral may itself have a significant influence in deflating demand (a topic briefly touched on in para. 57, above).

If we have to live with an economy whose responses are slow, there are some advantages in seeing that they are as slow as possible.

102. The question of preventing a cost-price spiral from starting is more difficult. In the case of external disturbances, one approach would be to try to isolate the economy, either by varying subsidies or by stabilizing world prices: the latter amounts to a policy of buffer stocks. In both cases, apart from practical considerations, the difficulty is the same: that of distinguishing in advance the temporary from the permanent change.

103. The case of an internally generated cost inflation is the worst, because no relief can be expected from damping influences. Such an inflation only arises because the 'stability characteristics' of the economy (para. 47) have turned perverse; and it can only be cured by restoring them. The question of remedy perhaps really turns on whether we take the community's pattern of response to demand influences as given, and attempt to moderate the rate of wage and price increase by reducing demand; or whether we consider the reduction in demand would have to be so drastic, that the better hope is to attempt to alter attitudes. So far as it goes, the analysis of this paper suggests that the reduction of demand might have to be large, hence that a tolerable solution may be impossible without a change in modes of behaviour. But the conduct of wage negotiations, the fixation of prices, and the growth of productivity (as this paper has sought to show) are interconnected; and an effectively different attitude towards one probably requires a change toward all three.

104. A merely negative aim of preventing prices rising, and as a corollary, of preventing money wages increasing faster than productivity, has serious limitations which may prevent success even in its immediate object. The best hope on such a policy would still be no better than that prices would be stable between times when they rose. Purely negative price restraint, moreover, would inevitably tend also to freeze the pattern of relative prices, which if long maintained would undermine technical adaptability. It can therefore be argued that the conditions for an adequately stable system require to be formulated in a more flexible and more positive form. Thus long-run stability would seem impossible unless money wages and salaries increase *less* than productivity. At times of stable import costs this would imply a *falling* final price level: at times of rising import costs, some offset would be available to moderate the price rise. Again, within a stable average price level, it is necessary to have some prices *falling*, since some prices are bound to rise. A price-*freezing*

policy on the part of business is therefore inadequate: prices should fall most where the (actual or potential) increase in productivity is greatest.

105. There appear at present to be two types of rigidity which must greatly impede the desirable adjustments indicated above. First, prices appear to be particularly sticky downwards (for this reason the model set out in Part II was assumed not to operate in a downward direction). Second, because resources are relatively immobile in the short run, productivity tends to increase only where production increases. The combined effect of these types of rigidities must be that there is no tendency for prices to be reduced in anticipation of the increase in productivity which would occur if production were increased, and which would make it possible to reduce prices; and of the increase in sales which would then occur. This must impede both the growth of the economy and proper continuous adaptation in its shape. Demand for goods which could be produced more cheaply is not encouraged, nor are resources drawn to places where either demand, or the possibilities of technical advance, are greatest. It is likely that the full potentialities of growth are never made manifest; and since they remain hypothetical only, apparent justification is given to the over-cautious policy which prevents their realization.

106. Such rigidities also create something of a dilemma for general fiscal policy. Progress appears to require a high level of demand; but with high demand, necessary adaptations do not take place. Realization of the gains of technical progress depends very largely on an appropriate growth of money incomes. Hence too much of the task of regulating the growth of real demand is left to the authorities. The process of regulation is also made unnecessarily clumsy, because in estimating future supply, account has to be taken not only of manifest factors but of supply potentialities which are not being utilized.

107. The deadlock could be broken, if this analysis is correct, by greater aggressiveness on the part of business. Expansion of output, undertaken in order to reduce costs and prices, would tend to create the increase in real demand which would justify the increase in output. It would seem, therefore, that the general 'competitiveness' of the economy is rather intimately connected with the inflationary problem. The greater the degree of 'competitiveness', the greater is the inherent downward bias of prices; and the smaller, it may be hoped, the pressure for higher wages. In addition, a higher rate of productivity growth would make the system more stable in the face of external disturbance. The greater flexibility of prices would reduce the need for government intervention in keeping demand and supply in balance, and facilitate what part of the task remained. The problem of inflation might, thus, prove more manageable.

108. The last stage of this discussion is a step outside the limits of the argument of this paper. The suggestion that the 'downward stickiness' of prices might be changed involves a modification in the working of the system as described here. Moreover the suggestion also implies that it is possible to bring about a change in ways other than as a response to economic stimuli: that (to use, out of context, a phrase of Sir Dennis Robertson's) the conduct of the donkey may be affected not only by kicks and carrots, but by stroking its ears. The attitude, both of the organs of government and of the body governed, undergoes continual change. It seems unreasonable to suppose that only in the former case can the change be intelligent.

MATHEMATICAL APPENDIX

Note by L. A. DICKS-MIREAUX

THE cost-inflation model described in Part II (i) of this paper has the form:

$$P_{t+2} = \left\{aP_t\frac{R_{t+1}}{Q_{t+1}}+(1-a)M_{t+1}\right\}\{1+bU_{t+1}-b\}. \tag{1}$$

For the purposes of analysis certain assumptions, suggested earlier, will be made. These are:

(i) The profit mark-up percentage is constant over time, i.e. $U_{t+1} = 1$ for all t.

(ii) Real wage earnings are constant over time, i.e. $\frac{R_{t+1}}{Q_{t+1}} = k$, a constant for all t.

The model may now be written as:

$$P_{t+2} = akP_t+(1-a)M_{t+1} \tag{2}$$

The next price increase generated will be:

$$\begin{aligned} P_{t+4} &= \frac{akP_t}{akP_t+(1-a)M_{t+1}}.kP_{t+2}+\frac{(1-a)M_{t+1}}{akP_t+(1-a)M_{t+1}}.M_{t+3} \\ &= ak^2P_t+\frac{(1-a)M_{t+1}M_{t+3}}{akP_t+(1-a)M_{t+1}}. \end{aligned} \tag{3}$$

The general expression for a price increase may be written as:

$$P_{t+2n} = ak^nP_t+\frac{(1-a)\prod_{r=0}^{n-1}M_{t+2r+1}}{D(n-1)} \tag{4}$$

where

$$D(n-1) = (aP_t)^{n-1}k^{\frac{1}{2}n(n-1)}+(1-a)k^{\frac{1}{2}n(n-1)}\sum_{r=0}^{n-2}k^{-\frac{1}{2}(n-r)(n-r-1)}(aP_t)^r\prod_{r=0}^{n-2-r}M_{t+2r+1}. \tag{5}$$

Combining (4) and (5) it can be shown that the most general expression for any price increase is:

$$P_{t+2n} = \frac{D(n)}{D(n-1)}. \tag{6}$$

Hence the full price change over any period may be written as:

$$\prod_{n=1}^{n}P_{t+2n} = \frac{D(n)}{D(n-1)}.\frac{D(n-1)}{D(n-2)}\cdots\frac{D(2)}{D(1)}.\frac{D(1)}{1}$$

$$\therefore \prod_{n=1}^{n}P_{t+2n} = D(n) \tag{7}$$

where

$$D(n) = (aP_t)^nk^{\frac{1}{2}n(n+1)}+(1-a)k^{\frac{1}{2}n(n+1)}\sum_{r=0}^{n-1}k^{-\frac{1}{2}(n-r)(n-r-1)}(aP_t)^r.\prod_{r=0}^{n-1-r}M_{t+2r+1}. \tag{8}$$

1. The Critical Value of P_t

Further assumptions are now made, namely that $k = 1$ (or $R = Q$) and $M = 1$ for all t.

Equation (7), the general expression for the price change over any period now becomes:

$$\prod_{n=1}^{n}P_{t+2n} = (aP_t)^n+(1-a)\sum_{r=0}^{n-1}(aP_t)^r. \tag{9}$$

If the system is not to be explosive, equation (9) must have a finite limit with increasing n and this is only possible when $|aP_t| < 1$

i.e. when

$$P_t < \frac{1}{a}. \tag{10}$$

2. An Injected Import Cost Increase

It is here assumed that at some stage an increase in import prices occurs, M_{t+2s+1} say, and that at all other times import prices are stable. Further it is assumed that $k = 1$ and $P_t = 1$.

Equation (7) now becomes:

$$\prod_{n=1}^{n} P_{t+2n} = a^n + (1-a^n)M_{t+2s+1} \tag{11}$$

as $n \to \infty$, $a^n \to 0$ since $a < 1$ and

$$\prod_{n=1}^{n} P_{t+2n} \to M_{t+2s+1} \tag{12}$$

This is true for any once-and-for-all increase in import prices so that no matter how great the increase the system can never become explosive.

3. Limiting Values of Price Changes

Here four cases will be considered:

(i) $1 < P_t < \dfrac{1}{a}$, $M_{t+2s+1} > 1$, but all other $M = 1$, $k = 1$.

Under these conditions equation (7) becomes:

$$\prod_{n=1}^{n} P_{t+2n} = (aP_t)^n + (1-a)M_{t+2s+1} \sum_{r=0}^{n-1} (aP_t)^r \tag{13}$$

But $aP_t < 1$ so that as $n \to \infty$

$$\prod_{n=1}^{n} P_{t+2n} \to \frac{(1-a)}{1-aP_t} M_{t+2s+1}. \tag{14}$$

(ii) $1 < P_t < \dfrac{1}{a}$, $M = 1$ for all t, $k = 1$.

From equation (14) it can be seen that in this case that as $n \to \infty$.

$$\prod_{n=1}^{n} P_{t+2n} \to \frac{1-a}{1-aP_t}. \tag{15}$$

(iii) $P_t = 1$ and $k = 1$ for all t, $M_{t+2s+1} > 1$, but all other $M = 1$.

Equation (14) now becomes:

$$\prod_{n=1}^{n} P_{t+2n} \to M_{t+2s+1} \tag{16}$$

as $n \to \infty$. A result shown earlier in equation (12).

(iv) $1 < P_t < \dfrac{1}{a}$, $M = 1$ for all t and $R < Q$, i.e. $k < 1$.

Substituting these conditions in equation (7) gives:

$$\prod_{n=1}^{n} P_{t+2n} = (aP_t)^n k^{\frac{1}{2}n(n+1)} + (1-a)k^{\frac{1}{2}n(n+1)} \sum_{r=0}^{n-1} k^{-\frac{1}{2}(n-r)(n-r-1)} \cdot (aP_t)^r. \tag{17}$$

Equation (17) will give rise to a turning point as n increases. After this turning point, however, the expression will tend to the value zero as n becomes infinitely great. In other words during a certain period prices will increase and then will fall steadily.

DIRECT TAXATION AND ECONOMIC GROWTH[1]

By URSULA K. HICKS

DURING the last few years, in country after country, the burden of direct taxation has become a live issue. In the industrialized countries high rates of tax established during the war and largely maintained after it (due mainly to the needs of defence) are a natural cause of this preoccupation. In the less-developed countries interest in the subject has been no less keen, because of the fear that income and profit taxes, whose revenue is so necessary to finance public works, will deter the industrial development which is so ardently desired.

In this country discussion has naturally centred round the Reports of the Royal Commission on the Taxation of Profits and Income, and matters arising therefrom.[2] Although the scope of the Royal Commission Reports was wide, subsequent discussion seems very largely to have been concerned with questions of equity. Under the circumstances this was probably inevitable. Minor and unnoticed inequities tend to become major, and to attract attention, when tax rates are heavily increased. A great part of the Commission's time was occupied with matters of this sort. Secondly, inflation itself is inherently inequitable, as between some sorts of income receivers and consequently some sorts of taxpayers, and others. The fact that taxes may have odd effects in a period of rapid inflation does not, however, prove that in general and in a more orderly period the taxes themselves are wrong. This concentration on the equity aspect of income and profits taxes seems to me to have been doubly unfortunate. On the one hand it has emphasized differences which are matters of feeling (or politics) and for which there is little if any quantitative support. On the other it has diverted attention from the economically much more important aspect of the effect of current income and capital taxes, or of alternative methods, on economic growth. In the present paper I shall consequently leave almost wholly on one side questions of equity, however defined.

In the 1930's we regarded ourselves as a 'mature' or 'stagnant' economy unlikely to develop much further, and in fact, in spite of rather high unemployment (much of it a legacy from a very different set-up in the 1920's) we were doing quite well, thanks largely to the very favourable

[1] The gist of a paper read before the Marshall Society at Cambridge, 10 May 1956.

[2] Especially the Second Report of the Commission (1954), mainly concerned with personal income tax, and the Final Report (1955), mainly concerned with company taxation. Mr. N. Kaldor's 'An Expenditure Tax' is a notable by-product of his work on the Commission. Reference should also be made to Dr. I. M. D. Little's review of this book in *Economic Journal*, Mar. 1956.

terms of trade which gave us our essential imports of food and raw materials at very little cost in terms of our own efforts.[1] But in the post-war world we have become an 'underdeveloped country' ourselves, in the strictly parallel sense of countries like India: first, we are in urgent need to develop faster (in terms of increased productivity, real Gross National Product or what you will) than we were, or probably now are doing; secondly, we have got to achieve this against a background of not very good indigenous resources (of which the 1956 plan of the Coal Board is a sad reminder) and with a chronic shortage of the most needed skills.[2]

I

Naturally the outlines of a tax structure tailored for development will look substantially different in a conventional underdeveloped country than in a highly sophisticated economy like ours. Particularly relevant differences seem to me to be three: (i) in an underdeveloped country, in the usual sense of a backward country, a good deal more development responsibilities must be undertaken by the government than is necessary where industrial skills are already mature; hence (ii) in backward countries governments need tax revenue very urgently, more especially as they have considerable difficulty in borrowing, either at home or abroad (although with higher interest rates investors are more forthcoming); (iii) in backward countries a much greater burden of achieving the optimum rate of growth falls on fiscal policy than need be the case in the United Kingdom, because in such countries monetary controls are largely unusable or ineffective. But fundamentally the problem is similar in the two types of economy.

Mr. Kaldor and the 'functional financiers'[3] define the prime objective of taxation as the avoidance of inflation. In a developing country this consideration is of prime importance for growth, since inflationary pressure is likely to be very high where the development programme is large relatively to the size of the economy, and voluntary saving negligible. As Professor Lewis has shown[4] the prime necessity in such an economy is that the tax structure should be geared so that marginal rates of tax are always higher than average; if this condition is realized then government should always be able rather more than to contain the inflationary pressure generated by the process of development. In principle the simplest type of tax which satisfies this condition is a general progressive income tax, but in primitive conditions this is not easy to achieve, and recourse must

[1] Cf. J. R. Hicks, *The Social Framework*, ch. xxi.

[2] Since writing the above the D.S.I.R. Report on Automation has heavily underlined this point.

[3] Cf. especially A. P. Lerner, *The Economics of Control*.

[4] W. A. Lewis, *The Theory of Economic Control*, p. 239.

be had to outlay taxes which have some of the same effects. Thus expenditure taxes have an important part to play in curbing inflation in primitive conditions, but to be effective they must be assessed on things of which people buy more as they get richer, and must cover the purchases of as large a section of the population as possible. This is of course far from Mr. Kaldor's expenditure tax.

For a country like the United Kingdom I feel we need to define a tax structure geared to growth more carefully. The basic needs are (i) to secure adequate rewards for enterprise and initiative, especially in lines which promise a rapid rise in the G.N.P. (the absence of an effective income tax in a backward country probably implies that this problem will settle itself); (ii) to secure sufficient investment (capital formation and research) in growth-promoting lines; and (iii) to secure sufficient control of consumption and investment, both in the public and private sectors, to enable the authorities to pull back into line the inevitable deviations above or below the 'warranted rate of growth' if they show signs of reaching serious dimensions. This calls for something much more subtle than is possible in a backward country; however, in a country like the United Kingdom taxation is not the only, and not always the best, way of achieving these objects. Nevertheless it must clearly play an important part.

At the start I want to emphasize a point that sounds obvious, but is often overlooked: that is that we are now in 1956; it can be dangerously misleading to attempt to solve the problems of 1956 in terms of the background of 1950 or even of 1954. Eleven years ago there finished a war which had a profound effect on the world economy, and more particularly on the British economy. Of the changes wrought by the war and its aftermath those that are most relevant to our discussion can, I think, usefully be put into three classes: (*a*) those which were essentially transitory and which have now passed away—in most countries in this sense the war may be said to have ended about 1952, being slightly delayed by the Korean episode; (*b*) those which have proved more enduring and which still exercise some, although a declining effect, in contrast to a general tendency to return to the pre-war trend; and (*c*) those changes which must be expected to be permanent, from which there is no going back. Naturally these categories merge into one another at the edges, especially (*a*) and (*b*).

The permanent changes merit first attention, since they are now part of the data. Of these we may single out five: (i) (more or less) halving of the value of money; this is partly, but not wholly, responsible for (ii) the increase in the number of income tax payers from some 3 million to over 17 million, together with a tremendous rise in the height and progression, both of income taxes and of death duties; (iii) a fundamental change in the

position of industrialized *versus* non-industrialized countries (save perhaps for the two giants of the U.S.A. and U.S.S.R.); the independence of former colonies has brought about a real loss to most West European industrialized countries, while at the same time the process of industrialization of the primary producing countries implies both a greater food consumption at home and a wider spread of manufacturing skills, all adding up to the virtual certainty that we shall not in this country enjoy again the favourable terms of trade of the 1930's; (iv) the establishment of the welfare state—not indeed implying that the percentage of social expenditure to the national income has been drastically increased, but rather that there has been a change from negative social services (concerned with money grants to the poor and unemployed), to positive services of national health, family allowances, and old-age pensions, all of which greatly decrease the need for building personal reserves against emergencies (a matter of relevance to personal saving). Against these four changes on the whole tending to make things more difficult for growth in the British economy must be set; (v) the much greater understanding of the working of economic processes, implicit in the new techniques of social accounting and input/output analysis.

It is important to note that these changes (or the significant part of them) took place rather quickly in what is now a considerably long time ago; hence it must be expected that their impact effects, including the short-period adjustments which individuals and firms made to the changes, have now been largely exhausted. They have become part of the data.

Turning to the other extreme, the transitory changes to which we need now not pay too much attention are (i) rationing and the mass of war-time controls (in other words, by and large, the price mechanism has been restored both internally and internationally): this is of fundamental importance for the effects of taxation; (ii) the exceptionally low interest rates which were established during the war and subsequently intensified, partly deliberately, partly as a consequence of a long process of the 'glutting of a closed economy with cash' in a way that could hardly have been avoided. Nevertheless, although it has formally passed away, the effect of this war-time change still casts its shadow in the excess liquidity of the national debt, making it difficult to exert a credit squeeze.

This latter change is thus almost in my (*b*) category. The most relevant other change in this category is concerned with what has been happening to the distribution of available incomes. Although the latest figures[1] are only complete up to 1954, it appears that by then the turning-point had already been reached, and the first signs of a return towards the

[1] Cf. D. Seers in *Bulletin of Oxford Institute of Statistics*, Apr. 1956.

normal pattern were reasserting themselves. The effect of the war and its aftermath had been a tremendous levelling up of distributed incomes, and of course still more of available (post tax) incomes. This levelling process had proceeded both between the different categories of income, and in each category between the skilled and the unskilled, the leaders and the followers. Although the available breakdown of income categories is not ideal from this point of view, the change is obvious. Between 1938 and 1954 property incomes had risen 40 per cent., mixed (farm and professional) 140 per cent., wages 220 per cent., salaries and pensions 250 per cent. and social security benefits 270 per cent. Since farm incomes rose heavily, there was a relative decline in professional incomes, while salaries are inflated by the inclusion of a number of new firms' pension schemes. By and large a substantial levelling between 'rich' and 'poor' is implied. These changes were heavily reinforced by the effects of taxation: property and mixed incomes lost 20 per cent. of their pre-tax incomes, wages, salaries, and pensions only 8 per cent.

The two most striking aspects of this levelling process have been the decline in the share of income from property on the one hand and the rise of unskilled relatively to skilled earnings on the other. Property income of course is by no means wholly the perquisite of a rentier class; most of the middle and upper incomes are 'mixed' in the sense of being derived partly from present labour, partly from the fruit of past labour, and partly, although to a diminishing extent, from inherited wealth. Further, the wage-earning rentier is a very significant element in the economy; his quite extensive savings are largely invested in house property, which, due to rent control, has suffered the largest decline of any category. It is more true to say that levelling has been at the expense of saving than at the expense of a now relatively unimportant rentier 'class'. A change of this type has been experienced in all Western countries; it is an inevitable accompaniment of war and inflation. The significance for Britain is first, that in 1938 post-tax incomes were already more equally distributed than in comparable countries, for example Canada and the United States; secondly, that the natural change has been reinforced to a greater extent by deliberate policy.

Not less significant than the greater equality between different categories of income in the United Kingdom is the greater equality between different types of income within categories, especially between skilled and unskilled in the weekly wage-earning groups. Here we can draw on Professor Lloyd Reynolds's[1] elaborate long-period international comparisons between the wage structure of the United Kingdom, United States, France, Switzerland, and Canada, as well as the more tentative conclusions

[1] *The Evolution of Wage Structure*, Yale University Press.

he has reached concerning the U.S.S.R. From a nineteenth-century wage structure of wide disparities, both the United Kingdom and the United States had moved by 1938 to a position of much greater equality, but the movement had proceeded very much farther in the United Kingdom than in the United States. This was the position even before the war and its aftermath had made their effect. Of all the countries examined by Dr. Reynolds the United States has a notably greater disparity than the other Western nations; the only exception is the U.S.S.R., where it is still greater. It is hard to believe that there is not a significance in the fact that the two most rapidly progressing countries are also the two with the greatest disparities in the rewards of labour.

It is important to notice that in respect of these movements also, the significant change had already taken place before 1946, and often considerably before that date. Between 1946 and 1950 there was a moderate but much reduced intensification of the war-time trend; since 1950 there has been a slight return to the pre-war relation between skilled and unskilled wages—this was a very important ingredient in the printers' strike of early 1956. The reversal has not yet proceeded far enough to restore the 1946 position, let alone that of 1938. If we are to regard inequality of remuneration, in the sense of really attractive rewards for the leaders in all categories—wage-earners, salary-earners, and entrepreneurs—as a necessary concomitant of rapidly rising productivity, then we must conclude that while our 1938 structure may have been all right for a country which had given up ambitions of rapid development, as further modified by the changes which have since taken place, it must be judged to be highly unsuitable for a country which has an urgent need of rapid development.

Obviously equality of incomes has a strong social attraction, especially for Englishmen, and there is no virtue in inequality as such. We need to distinguish sharply between inequalities that are economically functional and those which are not. Even in respect of earned incomes inequalities may not always be functional, as when entry into an occupation is restricted by outdated apprenticeship rules and so on. Again in many backward countries which are just starting to develop, there is often a great concentration of receipts in the hands of traditional authorities who are unlikely to be performing any important economic function. I do not contend for inequality of incomes for its own sake; nor do I think there is much substance in the argument sometimes put forward that we need inequality to restore the level of personal savings, but I do contend that we need much more functional inequality than we have at present in available incomes, if we are to get sufficient supplies of the skills and enterprise needed for rapid development. In increasing functional

inequality and decreasing non-functional inequalities the tax structure can play an important part.

II

We can divide the objects we wish to further by taxation into four categories: (i) optimum work incentives, especially in the key occupations for development, (ii) optimum investment incentives, both in respect of (*a*) portfolio investments (lending of savings) and (iii) (*b*) direct investment, mainly fixed capital formation, and (iv) the reduction of non-functional inequalities. In this you will notice that I have said nothing directly about the stimulation of saving, since it seems to me essentially a negative concept, which will look after itself on the whole, if the positive incentives are correct, and if economic policy is sound in general, especially in respect of the preservation of the real value of past saving. At the same time it is of course necessary to see that the tax structure does not inadvertently encourage spending at the expense of saving, especially spending derived from non-functional inequalities. This it undoubtedly does today to some extent, although not nearly to so great an extent as is sometimes claimed, if we take into account the additional incentives to high-spending which were created by economic changes due to the war.

The first question then is to consider how the tax structure can be adjusted to improve work incentives. A few years ago economists were all convinced (quite likely correctly in the conditions of the time) that the extension of income tax in general and the system of P.A.Y.E. in particular, were seriously disincentive to effort. At that time war-weariness, the existence of accumulated balances of war-time earnings, and the shortages of worthwhile things to buy, were heavily reinforcing the impact effect of the revolution in income tax. In contrast, over the last eighteen months or so the anxiety of both sexes to work, and to take on additional jobs, has been very noticeable; in particular the increase in the supply of women workers has falsified all predictions.

Nevertheless the potential disincentive effects of a big gap between marginal and average tax rates (especially operative below the standard rate range) and of high average rates in the upper income ranges, need to be watched; but they do not seem to call for general action at present. The problem is essentially one of ensuring higher retained incomes for particular categories. Below the surtax range this is primarily a question of restoring differentials for skill, which is mainly a matter for private enterprise, although government can help in a number of ways, by throwing its influence in the right direction. Above the surtax exemption limit the problem is more difficult, since the effect of any increased differential will at present largely be lost through increased tax liability. Nevertheless it

is this group, the managerial class with £1,000–£3,000 before the war, now £2,000–£5,000, which it is probably more important to help in the interests of increased productivity, than any other in the country.

It should be remembered that the surtax-exemption limit has never been raised since it was established at £2,000 after the first war; there is a strong *a priori* case for raising it now in some correspondence with the fall in the value of money.[1] One of the factors which has operated since the war to reduce the efficiency of assessment has been the great increase in the number of surtax payers, making it impossible to deal with each assessment individually in the traditional pre-war manner. This failure to adjust to the change in the value of money is (or should be) the substance of the annoyance of Dr. Little's academic friend who complained that surtax was 'never intended for the likes of him'.[2] In a majority of cases, however, one could retort that in a developing economy 'unproductive labour' of that sort has no special claim on economic resources, as argued by Adam Smith 170 years ago. Another relevant change (recommended by the Royal Commission) would be the continuation of earned income and family rebates beyond the surtax-exemption limit. Still more important could be the raising of the ceiling for scholarships from public authorities to the university (or the adoption of a quota system to include all children), thus discriminating in favour of the more intelligent in all income groups, and not as at present, merely in the lower income groups.

It may be objected that these are small changes; but they would add up quite substantially, and they would almost certainly impinge where they were most wanted—in favour of fairly high earners with small property endowment. Nevertheless we should clearly also look at more adventurous alternatives, such as Mr. Kaldor's expenditure tax. But here there is one preliminary point to settle. In order to make his expenditure tax more palatable Mr. Kaldor introduces 'spreading' of the tax burden in two different senses. First, since (unadjusted) an expenditure tax is much more regressive on the large family than an income tax (assuming that there is some margin of saving) the 'quotient'[3] system is introduced, whereby the income to be taxed is divided by the number in the household; this goes far beyond any family rebates that have ever been suggested, but if it were acceptable it could equally well be applied to an income tax.

Secondly, it is of course obvious that an expenditure tax discriminates against fluctuating expenditure (just as an income tax discriminates against fluctuating income, a point which we shall have to examine later). But fluctuations in expenditure are likely to be much more widely and

[1] The Chancellor has recently given figures of the estimated cost of raising the surtax-exemption limit. To raise it to £3,500 would at existing tax rates cost only £40 million, to £4,000 would cost £50 million. Cf. *The Economist*, 12 May 1956.

[2] Little, op. cit.

[3] Kaldor, op. cit., pp. 208–9.

fortuitously spread than fluctuations in income; they will always arise with the purchase of consumers' durables and are likely to arise whenever a family emergency occurs. Mr. Kaldor proposes to deal with the first type of fluctuation by spreading liability over a number of years, and the second by making insurance easy. If these concessions are to be assumed practical for an expenditure tax they must also be assumed practical for an income tax. The Royal Commission tried very hard to get the Inland Revenue to agree that a simple spreading of liability of fluctuating income would be practical, but reluctantly they were persuaded that this was not so, at least not in the foreseeable future. Hence, if we are comparing the stimulus for development of the two forms of tax we must treat them similarly, which implies, it seems, that we must rule out the benefits of both types of spreading in the expenditure tax. Otherwise it is like cheating in one game of patience and not in another.

Even allowing for spreading it is Mr. Kaldor's[1] conclusion that, in respect of work incentives, the only superiority of the expenditure tax over the present British income tax, assuming the *same rates of tax*, is the stimulus to saving of the expenditure tax. Even this would probably disappear if the *same total revenue* was to be collected, depending on the taxpayers' outlay habits. Only in the case where saving is for indefinite accumulation (in which case it never bears any expenditure tax) is there a clear superiority over the income tax. We must therefore ask what are the motives which induce people to save, or more fundamentally, what are the motives which induce them to work hard enough to have a surplus over current consumption, which is available for saving?

There appear to be three chief motives behind this phenomenon of extra work; and they are probably of very different magnitude. First, there is the desire to 'save up' for large outlays, a process which cannot be generally substituted by borrowing except at prohibitive cost. Secondly, there is the desire to save for future needs, above all to increase the amenities available in retirement, and finally there is presumably *some* desire to accumulate indefinitely, with no expectation of spending, unless by one's heirs. It is this latter type which is especially favoured by the expenditure tax; but it can hardly be doubted that social and economic forces, as well as the Health Service and extended pensions, and above all the influence of heavy death duties, have in the present generation much reduced the propensity for spontaneous saving on this account. There is no evidence that the effect of the expenditure tax would be sufficient to overcome these forces, even if we are prepared to agree that the concentration of wealth which it would promote is in itself a good thing.

The work motive of the desire to save for retirement has also been

[1] Kaldor, op. cit., pp. 134 ff.

substantially weakened by the spread of pensions. Much therefore depends on the revenue to be taken respectively by the two alternative taxes. An *unspread* expenditure tax would be very tough at the moment of retirement when a new mode of life has to be established. British income tax leaves this form of spending completely untaxed so far as it is met out of accumulated earnings (or according to the most recent budget concessions)[1] out of funds accumulated by insurance. Finally, if saving is mainly 'saving up' an unspread expenditure tax would be much tougher than an income tax, especially if, as seems likely, because of the narrower tax base, its rates and progression were higher. That saving up is a very important element in extra working today can hardly be doubted in this age of durable consumers' goods. Indeed the dissaving since the credit squeeze was tightened is a strong indication that consumers were heavily involved in this process.

We must therefore, I think, conclude firstly, that on balance an expenditure tax (especially an unspread expenditure tax) is less work incentive than British income tax; and secondly, that British income tax is not seriously disincentive, and could be made considerably more incentive if the quite feasible small reforms suggested above were introduced; hence for development it would be the superior instrument.

The main object of an expenditure tax, however, is not to make people work more but to make them spend less, especially to stop them spending in excess of their current incomes. From the point of view of economic growth, or even of stability without growth, such dissaving can be a nuisance since it draws resources away from more productive uses and may set up an inflationary pressure which requires correction. It is therefore desirable to investigate how far British income and capital taxes stimulate forms of dissaving which are undesirable in the sense that they are either inconveniently large from the point of view of applying a corrective, or are related to non-functional receipts. It cannot reasonably be claimed that this is true of dissaving the accumulated savings of a lifetime in retirement, since the anticipation of being able to do this is one of the strongest work incentives during active life.

The two types of dissaving which do seem to fit into this category are (i) the spending of capital gains due to 'speculation' (which, however, is not necessarily devoid of economic function), and methods of avoiding surtax, such as over-retention of profits in a closely controlled firm, and (ii) the deliberate dissipation of an estate in anticipation of death duties, through riotous living. Since I have lately written on the subject of capital gains taxation at some length[2] I only want to emphasize one point here: the opportunities for making capital gains just after the war were quite

[1] Finance Act, 1956.

[2] Cf. *The Banker*, Apr. 1956: 'Alternatives to Surtax'.

abnormally large, and the chances that the methods used would be challenged by the Inland Revenue were quite abnormally small. This must be regarded as a situation of which the impact effect has now passed, although to be sure some of the gains then made may still be being spent—there is little evidence available either for or against. Abnormal opportunities of this special nature must be expected to recur from time to time; the use which J. M. Keynes put to such an opportunity in the 1930's is well known;[1] but the greater part of them could and should be brought within the range of surtax. A further strengthening of the hands of the Inland Revenue is by no means impossible, while in normal times at least the ingenuity of the government's advisers follows close on the heels of the lawyers who advise taxpayers.

On the matter of dissaving by the 'new poor' which every inflationary period brings in its train, two points seem worth making: first, the sudden drastic rise in surtax rates in 1940 required in the longer period a drastic reshaping of the mode of life of those affected. In the short period the gap could only be bridged by dissaving. It must be presumed that the impact effect of this change has now passed away, and adjustments have been made. They would doubtless have been made more rapidly if artificially low yields on securities had not made it especially innocuous in income terms to consume one's capital. Secondly (and this is a more continuing trouble), a much more serious incentive to dissaving is provided by the present rates and structure of death duties. In the higher ranges of estates it is possible to proceed a long way in consuming one's capital while leaving one's heirs (post tax) hardly any worse off than they would have been if the estate had been handed down intact. There is a very clear remedy for this state of affairs, which would be rather more costly to administer than the present system of death duties, but which can hardly be said to be impracticable: namely, to assess death duties progressively not on the whole estate but on the main legatees—very small legacies would have to be exempted. This would imply perhaps three to five valuations of capital in place of one at present; but it would be more efficacious than the present system in redistributing property. On the face of it the change would lose revenue, but this could easily be more than compensated by the reduction of tax avoidance through dissaving. It is of course a delusion to think that revenue from death duties, coming out of private capital accounts, makes any real contribution to the budget balance in an economic sense.

III

We must now turn from the promotion of incentives to work to the promotion of incentives to venture. We need to consider three different

[1] Cf. R. F. Harrod, *Life of Keynes*.

aspects; private portfolio investment (purchase of securities), private direct investment (in the personally managed firm), and company incentives to venture and innovate. Space does not allow of more than a glance at the most salient points.

In respect of private portfolio investment the exclusion of capital gains and unrealized capital appreciation in British income tax does impart a discrimination in favour of buying securities with a low present yield but good prospects of growth. This no doubt does not always lead to an optimum allocation of resources in the economy (as when the expected improvement takes the form of a fall in the rate of interest, or a belief by the investor that he is cleverer than the market). There is, however, a definite presumption that the right sort of risk will also be backed, not necessarily indeed in the very small firm (except by those with inside knowledge) but in the medium and large firm, which today are responsible for quantitatively by far the greater part of innovation and experimentation. (The strong backing and rapid expansion experienced by small machine-tool firms since the war is a good illustration of the operation of this incentive.)

Recent easements in company taxation, especially the more rapid write-off allowed on capital formation and research and the indefinite carry-forward of losses, reinsure the lender as well as reducing the risks of a company embarking on untried investments. Further, under British income tax, only stamp duties stand in the way of a free switching of investments if desired, once the growth stage of a venture had passed. This imparts a very desirable flexibility. The opposite side to these advantages is that there is nothing in the tax system to curb a stock exchange boom, and consequent realization of capital gains. Apart from the effect of a credit squeeze, of which under modern conditions we have as yet too little experience, there are, however, two possibilities of moderating the opportunities for stock exchange speculation if it becomes excessive. Stamp duties could be drastically increased,[1] and on the other hand the powers of the Inland Revenue to charge intended evasion of surtax through capital gains at surtax rates could be extended. Since 1920 there has been steady progress in this direction, interrupted only during the exceptional situation of the war and its immediate aftermath.[2]

Compared to British income tax an expenditure tax (unaccompanied by a capital gains tax) would probably also favour investment for appreciation, at least wherever a high value was placed on long-period accumulation. Since, however, there is little evidence that this form of investment

[1] Cf. C. M. Kennedy, 'Stamp Duties as a Capital Gains Tax', *R.E.S.*, June 1956.

[2] Cf. Inland Revenue Memo. on The Taxation of Capital Gains, Final Report of R.C. Appendix.

is very common, the stimulating effects of an expenditure tax on risk-bearing would probably be less definite than those of British income tax The presence of a capital gains tax would be definitely disincentive to this type of risk-bearing, since whenever a switch of holdings took place the capital appreciation would be taxed, whether or not the funds were reinvested. This of course assumes that the capital gains tax is set at a rate high enough to be deterrent, which is almost certainly not the case with the American tax.

On the other hand, when we consider the effect of British taxes (income tax and death duties) on direct investment, say in a family business, it is evident that the situation is not so good. If the reform in death duties suggested above were carried out this would be a tremendous improvement; but the difficulty of building up reserves when they are subject to high rates of profits tax would still remain. In this one case long-period accumulation without the intention to realize is of real importance, and consequently the advantages of an expenditure tax would be substantial. This problem, however, needs to be seen against the wide background of the structure of industry, and the contribution to growth which can be expected from the small firm. This is a matter on which opinions differ very much; on the whole Americans seem to take a more rosy view of the contribution of the small company than is usual in this country. In any case the importance of the problem hardly seems to warrant a major change in the tax structure.

IV

We come finally to the vexed question of the taxation of company profits, that is mainly of profits not intended for distribution. Of all the changes which have taken place in direct taxation since the beginning of the war none is more striking and significant than the changed relation between personal and impersonal taxation. In spite of the extension of personal income tax from 3 to 17 million persons the revenue derived from profits taxation has increased by a much higher percentage than that derived from personal incomes. This is even more striking in the U.S.A. and Canada than in this country. The heavy taxation of undistributed profits started with war excess profits taxes and continued in post-war profits taxes. Such heavy taxation of funds ready and available for growth has little rationale, except the consideration that companies do not have votes. This being so, as the Royal Commission found to their chagrin, there is little hope of a substantial reduction in company taxation unless economic prospects turn drastically for the worse, and the aim of a growth tax should rather be to encourage a high rate of investment in general, with provisions for a curb if it should temporarily become too high, and

with especial stimulus to research and innovation. Before discussing measures which might be taken along these lines we must glance briefly at the implications of the present form of company taxation.

Company directors all agree in hating profits tax, not deterred by the unwillingness of chancellors to listen to their plaints. As Mr. Kaldor shows,[1] they tend to argue somewhat inconsistently (i) on the one hand that profits tax tends to raise prices (if so it cannot lower profits, or at least not proportionately) and thus injures our export position. This of course implies that the tax is shifted to consumers. (ii) On the other hand they contend that because of the high taxation of reserves, insufficient funds are available for expansion. It could of course be the case that an experienced shortage of funds was the result of personal progressive taxation and not of impersonal taxation, but that is quite another argument.

Unfortunately, in spite of all the efforts by the statisticians,[2] there is not sufficient evidence in the post-war data to draw any conclusions as to the availability of funds which would be valid for a less abnormal period. Mr. Kaldor agrees with most economists in holding that, save in exceptional circumstances, profits taxes are not passed on in higher prices, although he claims that in the very long period they probably are in an indirect way (this sounds to me suspiciously like the long period in which we are all dead). The distinction, however, is important for Mr. Kaldor's argument, because he finds the rationale of the taxation of undistributed profits to be as a means of taxing the capital appreciation of security holdings. If in fact (even if only after years and years) a rise in prices puts the charge on consumers and not on shareholders, the tax is ineffective for this supposed purpose.

I would maintain that the prospect of appreciation is something to be encouraged rather than taxed, since it is a powerful stimulus to risk taking, and hence indirectly of hard work. If we do want a rationalization of profits taxation (other than mere convenience) I would prefer to find it in the completion of personal income tax. The undistributed profits belong to the shareholders; it would be unjust if they were untaxed (incidentally it would also give such a strong stimulus to the over-retention of profits in the firm that the Inland Revenue might find it difficult to control). But since non-distributed profits are more like forced saving than available income, it is only reasonable that the shareholders should be taxed on them at less than surtax rates. In this connexion it should be noticed (as often seems to be forgotten) that 'ordinary shareholders' are

[1] Kaldor, op. cit., p. 146.

[2] Especially P. Redfern, 'Net Investment in Fixed Assets in the U.K. 1938–1953', *J.R.S.S.*, 1955.

not a class apart (to be identified perhaps with 'stock exchange tycoons'?). Anyone with a little surplus over current needs can buy ordinary shares; if he buys through a 'unit trust' he enjoys as good a risk spread as a large investor; if he takes out an insurance policy the company gives him the advantage of its accumulated expertise.

Hence apart from the fact that I regard the present taxation of profits as uncomfortably high (and if it could be substantially reduced it might be possible to get rid of that new incubus the separate profits tax), there are in my view two separate, but linked, mistakes about the present treatment of company profits when considered in relation to growth. In the first place the differential between distributed and undistributed profits is an encumbrance which is almost certainly harmful and should be abolished as fast as can be managed in view of possible hardship on firms which have distorted their distribution policy on account of it. This was one of the points on which the whole Royal Commission was most emphatically united.

Secondly, 'voluntary' dividend restraint should not be encouraged. If the economic situation calls for a sudden reduction in investment let it be done fairly and squarely by a temporary increased tax on total profits. Reform in this matter would make it easier to control the volume of investment in three ways. If firms were never allowed to become very liquid they would have to go to the public for a large expansion of the business; they would then be subject directly to credit controls and the market mechanism. Secondly, the abolition of the discrimination in favour of undistributed profits would restore the position in which there is no tax induced distortion of the economic calculus of firms. Finally, in respect of the closely controlled firm it would make it very much easier for the Inland Revenue to challenge the over-retention of profits with a view to avoiding surtax.

If, however, we cannot look forward to a substantial reduction in the total taxation of profits, as seems to be the case, it is of the utmost importance to see that every means is taken within the tax to encourage investment which promotes growth. In this respect British taxes are now very much more sensible than they were before the war. The indefinite carry-forward of losses makes it almost certain that capital will not ultimately be lost; the shortening of the period of depreciation is an important re-insurance against unforeseeable obsolescence, as well as against price changes. Finally, the tacit permission to use either straight-line or reducing-balance depreciation (or even a combination of both), according to the circumstances and type of the business, gives additional flexibility to investment policy.

There remains also the device of varying the pace of investment through

alterations in the allocation of depreciation allowances over time (initial allowances). It is clear that firms do not care for this device, and much prefer the steady 'investment allowance' which also gives them a net reduction in liability and not only an interest-free loan. The varying allowance can obviously be upsetting to business calculations, but it is not clear that it need cause a major upset to plans. The opposite side of this is the flexibility imparted to investment control (both general and selective), which is too convenient a weapon to sacrifice lightly. A much greater upset to business prospects can easily be caused by careless over-investment in the public sector, necessitating a credit contraction later. All of these inducements to invest (or to undertake research) in lines promoting growth would naturally operate as well or better with lower taxation of profits in general. On all of this I think Mr. Kaldor is in complete agreement, if we grant (as I think he would) that the complete abolition of the tax on undistributed profits and the substitution of a tax (subsidy) falling only on investment is not practical.

If I might now sum up my priorities for gearing British direct taxes more directly to stimulate economic growth than they do at present, they would be these: (i) measures to increase the inequality of incomes functional for development, especially a softening of the income tax progression in the middle income ranges through raising the ceiling on earned income relief and family allowances, including an abolition of the means test for university or technical scholarships (if desired above a certain point the scholarship could be taxed with the parents' income); (ii) measures within surtax to reduce non-functional inequalities of spending power, especially the manœuvring of capital gains to avoid surtax; (iii) the formal incidence of death duties to be transferred to legatees, where they would be assessed progressively on their total estates; (iv) the differential between distributed and undistributed profits to be abolished and the full working of variable initial allowances to be restored. These are modest requests, and none would appear to imply administrative unknowns. The sacrifice of revenue would be small, except perhaps in respect of death duties, and that as we know has no real functional significance in its present form. The cumulative effect of the reforms could well be decisive.

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